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The system builders' computer

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FERRANTI
Computer Systems

Computer Weekly

Thursday, March 26, 1981

NEWS BRIEF

GTE tries out
Prestel rival

AMERICA'S second biggest telephone company, GTE, is expected to launch a viewdata terminal with a nine-inch black-and-white screen and an alphanumeric keyboard before the end of the year. The terminal will also have a built-in auto-dialler and modem, like British viewdata terminals, and cost under \$500.

DG lays off 230

DATA General has laid off 230 of the 900 employees at its factory at Westbrook, Maine, because of a decline in demand for the peripherals and sub-assemblies built there. Data General shipments in the US have been hit by what the firm's president calls "economic uncertainty", but he thinks that they will pick up later this year.

NMW's profits up

CHESHIRE-based stockbroking computer bureau NMW has announced pre-tax profits of £105,000 on a turnover of £2,118,156. That is 25% up on last year's £363,000. The company has declared a 50% increase in dividend, to 15p per share. There will also be a four-way share split and a one for two bonus issue of its shares. The company's price touched £11.50 (£1.50 per share) on Monday prior to any wide circulation of the results.

Last version

THE Last One, the micro development system from DJI "AI" Systems, is to be translated to CP/M and other environments by Crystal Electronics of America. The Last One's promoter Scott Bambury says Crystal will be giving the package "the protection factor" and the cosmetic features needed to market it commercially.

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CII-HB denies IBM-compatible marketing link

Acsys picks Ireland for principal plant

by Keith Jones

IRELAND has been earmarked by Gene Amdahl's new company, Acsys, as the site for the main world-wide manufacturing centre of the IBM-compatible system currently under development at Acsys headquarters in San Jose, California.

Reasons for choosing Ireland included the generous tax incentives, the good experience of Amdahl Corp., Gene Amdahl's former company, with its Irish plant, and the fact that Acsys expected half its total market to be outside the US. Shipments would start in mid-1984.

The Acsys spokesman said that preliminary talks had already taken place with the Industrial Development Authority in Dublin and that Acsys president Cliff Maden was about to return there to submit formal proposals.

The spokesman said that the Acsys plant would be located in

the Dublin area, and would probably be unique among US-owned computer plants in Ireland in being the main manufacturing facility instead of an offshoot of the US manufacturing operation.

At the same time Acsys hopes to set up some kind of joint marketing venture in Europe with CII-Honeywell Bull for IBM-compatible machines.

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the Dublin area, and would probably be unique among US-owned computer plants in Ireland in being the main manufacturing facility instead of an offshoot of the US manufacturing operation.

Meanwhile, Gene Amdahl's son Carlton has joined Acsys as the company's vice-chairman. He has resigned his post as executive vice-president of advanced technology at Magnuson Systems, the neighbouring company which builds IBM-compatible machines that compete directly with IBM's 4300 series medium-scale mainframes.

Carl Amdahl helped design the

Magnuson M30 family and will

maintain links with the firm as a

member of its board. Gene Amdahl is chairman of Acsys.

The Times is computerised

Privacy law confusion

• From front page

A survey of CSA members' business has shown, however, that such threats in many sectors are not high.

Legislation would be introduced, Whitelaw said, "when an opportunity offers." This led Patricia Hewitt, of the National Council of Civil Liberties, to say she was "extremely unhappy" that no date had been given.

The NCCL would be pressing for a parliamentary debate to force the Home Office to reveal its timetable, she said; she also thought that practical considerations would eventually force the government to set up a DPA.

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On whether the Whitelaw scheme would meet the requirements of the Council of Europe and other foreign countries, Lindop said, "I would be surprised if the hardliners on cross-border data flow would be satisfied."

The British Computer Society is working on a scheme which the society would administer itself for certifying systems as sound for privacy purposes. Some talks have taken place with the CSA, the NCC, and the IDPM about cooperation, but it is unlikely the other bodies will agree to taking part in a scheme dominated by the BCS.

Implementation of the register would be progressive.

Whitelaw added that the government intended to sign the Council of Europe convention "in early date".

Mr Norman Lindop, whose committee reported on the subject in 1976, described the Whitelaw statement as a "damp squib" which would not protect anyone from the danger of police and security files. "The Civil Service and the establishment have won the battle," he said. "We have to work to see they don't win the war."

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User confrontation is avoided by NCR

by Keith Jones

NCR EXECUTIVES attending the annual meeting of the NCR Computer Users' Association last week were no doubt relieved to hear that the association anticipated no major confrontations with their supplier this year. But the meeting was not without some criticism of NCR's product and marketing policies.

NCUA chairman, Dereck Williams, referred to "slight dissatisfaction" among users about gaps in NCR's software offerings, in particular database and word processing software for the 8250, the smallest NCR machine qualifying users for NCUA membership.

UK launch of multi-processor system

by Rory Johnston

A MULTI-PROCESSOR small business computer system has been launched in the UK by Management Assistance Inc (MAI) as a successor to its Basic Four cluster product. Word processing, data processing, or a mixture of the two are provided for by different types of terminals, each with its own micro, connected to a central file processor.

The product was originally known in the US, where it was launched last autumn, as the Spectrum 80, but the name has now been changed to MAI 80. The central file processor which every system requires includes 2 Mbytes of fixed disc and 1.2 Mbytes of floppy disc. This can support up to four workstations, three printers,

and a further 17 bytes of fixed disc.

The word processing on the MAI 80 is the same as that already available on the Basic Four - the package known as Datavrite. An earlier venture by MAI into shared-logic word processing, called Wordstream, was closed down last summer after heavy losses.

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Company lands Saudi £2.6m contract - but bank withdraws backing

by David Creer
A £2.6 MILLION export contract won by Computer Resources to develop software for a Saudi Arabian government's Third Economic Development Plan.

Computer Resources' managing director Ian Orrock is critical of NatWest's response to the company's request for funds to meet the cost of the performance bond.

"The clearing banks don't understand how one does business in the Middle East... sometimes they don't even seem to speak English."

The two-and-a-half-year turnkey contract is for an online information system and will involve software development, technical support, operation, maintenance and training.

It will require 35 man years and 40,000 hours of terminal connection time to complete, is the largest ever for Computer Resources, and will represent almost one-third of the company's current annual turnover during the 30-month contract period.

It is part of a complete data centre being installed for the Gen-

eral Presidency of Youth Welfare as part of the Saudi Arabian government's Third Economic Development Plan.

The Saudis require a performance bond worth 5% of the contract price, and Computer Resources has had to divert £130,000 of working capital to cover it after failing to raise the money from NatWest.

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THE database specialist Cullinane Systems has joined the race in supply programmer productivity tools with the release of ADS/Batch.

Cullinane describes ADS/Batch as "a totally integrated application development system that increases programmer productivity by up to 10 times over conventional programming languages."

The package uses Cullinane's recently developed Data Dictionary as its central point, so that file formats and data structures can be defined once and automatically made available to other applications without lengthy interface modifications.

This technique, says Cullinane, makes standardised routines and error-checking easier that maintenance of programming becomes easier.

A high level language is provided with the system for logic programming. According to Vic Morris, Cullinane's UK manager, it is based around the Data Manipulation Language, giving additional procedures to define updates.

Cullinane Corp. has recently changed its name to Cullinane Database Systems to emphasize its commitment to the IDS product range, and its investment in market research and development has begun to bear fruit.

Charles Bachman, database designer and pioneer, has just become Cullinane's vice-president.

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SOFTWARE FILE

Zilog's Unix version is genuine article

THE ubiquitous Unix has been introduced by Zilog for its Z8000 as a multi-user development system.

The Z-Lab 8000 Programmers' Development System, announced last week from Zilog's Cupertino headquarters, runs under an operating system called Zeus which is Zilog's own Z8000 version of the original Bell Labs Unix.

The Z-Lab system can support up to 16 users and can be used to develop code for all Zilog MPUs. The system separates hardware and software, according to Zilog. This could take advantage of the large number of tools already developed through Unix for such purposes as documentation.

Zilog paid Western Electric the full licence fee for Unix, so like the Microsoft 16-bit implementation

(Xenix), Zilog's Zeus is the genuine article.

"Judging by the development time, Unix was decided upon before designing the hardware," said Pittman. "Zilog has extended the basic Unix system," explained UK marketing manager Phil Pittman.

"There have been some enhancements to the Bell Labs original, particularly related to ease of use and the reliability of file systems."

"As far as the command structure is concerned, someone who knows Unix will not notice any difference."

Zeus supports over 60 utilities, such as self-teach aids and editing/operation aids.

"The actual software development was fairly minimal," said Pittman. "It was just a matter of recompiling Unix software to run on the Z8000." Zilog used its cross-software package, which was released a year ago for developing Z8000 code on the Digital Equipment PDP-11.

"We've tried to put something together which would take the user all the way through the development cycle."

Z-Lab is available in the US in two versions: Model 20 with 256Kbytes of memory, 24-megabyte Winchester disc drive, and two controllers, costing \$27,000; Model 30 at \$33,950 for 512Kbytes of memory and two Winchesters.

Zeus is priced at \$2,000 for one user and \$4,250 for four users.

Prices for the imminent European release are likely to be in the same region.

Terminal turns into a mini

THE Mantis development system, seen by Cincom as a potentially wider selling product than its award-winning database Total, was launched in the UK last week.

"What we've done is turned a 3270 terminal into a mini," said Mantis product manager Merle Parkes. "Somebody using a mainframe terminal can get the sort of productivity and ease of use associated with minis while actually sitting at the screen."

"We've tried to put something together which would take the user all the way through the development cycle."

Norwell, a Manchester firm which has just opened a new London office, sees solicitors as a potentially enormous market - there are about 24,000 in the UK. There is already about £500,000 worth of Data General Novas and Eclipse kits on order for the system.

Norwell managing director Tony Welshy admits to having re-invented the wheel in the process of developing an adaptable all-purpose product for his chosen market.

"One of the advantages is that we learn from previous mistakes. We can introduce things we missed last time, and cater for a specialised market because we know the topic inside out."

Welshy does not see the system as a turnkey package, but as a product which can be adapted to individual needs. "It's a market where people feel they know what's right. Features have to be tailored according to needs. Of the six systems installed, for instance, five have totally different numbering systems."

Adaptable package aimed at solicitors

A SOFTWARE house which caters exclusively for solicitors has celebrated its ninth birthday with the launch of a new package on the Data General commercial systems range which can cope with the needs of a two-partner practice right up to major firms with 60 partners and 400 staff.

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Leipzig Fair is one of the East's windows on the West. Paul Fisher reports

UK firm wins £87m contract at Fair of mixed fortunes

REACTIONS of UK visitors and exhibitors to this year's Leipzig spring fair, the major East German industrial and trade show, were not prepared to elaborate.

"We travel," said Robertson, "in hope and hope that our hopes come true." He did not know if Plessey would be travelling to Leipzig next year.

EAST GERMANY

The major data processing presence, with a claim to have over 40 new developments on display, was the East German VEB Kombinat Robotron. (VEB stands for volkseigenbetrieb which, literally translated, means "people owned plant".) According to a Robotron spokesman: "Our combine is represented by 70,000 workers... with millions of products and projects exported to more than 60 countries."

Some 70% of Robotron's production is exported (most to the Soviet Union), the majority through an organisation called Robotron Import/Export. Only a small proportion reaches the UK where there are four distributors handling typewriters, office furniture, drafting equipment, and small computers and accounting machines.

At present Daro Systems Services from Oldbury in Birmingham sells the 1720 visible records computer, the 1711 electronic invoicing and accounting machine and the 1355 electronic booking machine. The 1720 sells at from £4,500 upwards and is supplied with a 100-chip matrix printer, from 2K to 32K of storage, and Daro software for invoicing and accounting work. There are 200 installed in the UK.

Plessey director P. Rogers found two out of a scheduled three meetings with East German dignitaries were cancelled. Preliminary discussions, following an East German approach, over a licensing deal worth upwards of £1 million

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a keyboard and daisy wheel printer with a small alphanumerical display which is recommended for the issuing of vouchers. A variety of PROMs are promised, as are several form feeding options.

The S120 and S130 are supplied

with 24x80 screens. The former is intended for screen-oriented data collection and processing and has 64Kbytes of memory and a choice of floppy discs or cassettes. The S130 is said to combine the applications of the other two models and is supplied with a printer. It takes up to eight 256K-byte floppies.

All three are based on the K1520 microprocessor and the majority of components and peripherals are East German. Full hardware and software compatibility is offered. They are due for volume production later this year and it is expected that they will be marketed in the UK. If the prices are right and the customers are assured of support, they should do well.

More sophisticated is the A6401 system which takes up to eight disc memories or mag tape units. Its 16-bit processor is billed as a 16-bit device from Robotron but it is actually two eight-bit chips.

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COMPANY NEWS - 1

Setting up your own company - 4

How merchant banks can help find the money

In this fourth article on the financing of small computer companies we look at more sophisticated sources of finance and financial advice than those previously considered. In principle, this means looking at the services of merchant banks and finance houses.

A number of these institutions have recently been active in obtaining finance for computer companies, and the merchant banks seem once more to be playing their traditional role of finding finance for British business.

David Lowe, an executive at Robert Fleming, the merchant bank responsible for the private placing of £2 million worth of shares for Digico's parent company Spanner Investments late last week, made the following points about the services of a merchant bank:

"We, along with other merchant banks, have a special interest in the new technologies, especially in the computer field. This is partly because we see the new technologies providing good investment opportunities, and partly because we have a historic role as advisers and providers of finance for small and growing companies.

"However, we see our real role as providers of advice and assistance as a company moves from one phase of its development to another. When raising funds for small companies it is vital to get right the match between investor and company, and this is where the quality of advice can be measured by a company asking itself if

it is confident that the advice it has been given is in its own long-term interests.

"As a merchant bank we can either sell shares to institutions with which we have historic links, or arrange private or public placings of shares."

"Small companies should not be afraid to approach merchant banks although a certain amount of re-education is needed between small computer companies and investors. Computer companies should come to the City with an open mind, and try and appreciate the investor's point of view as well as their own needs."

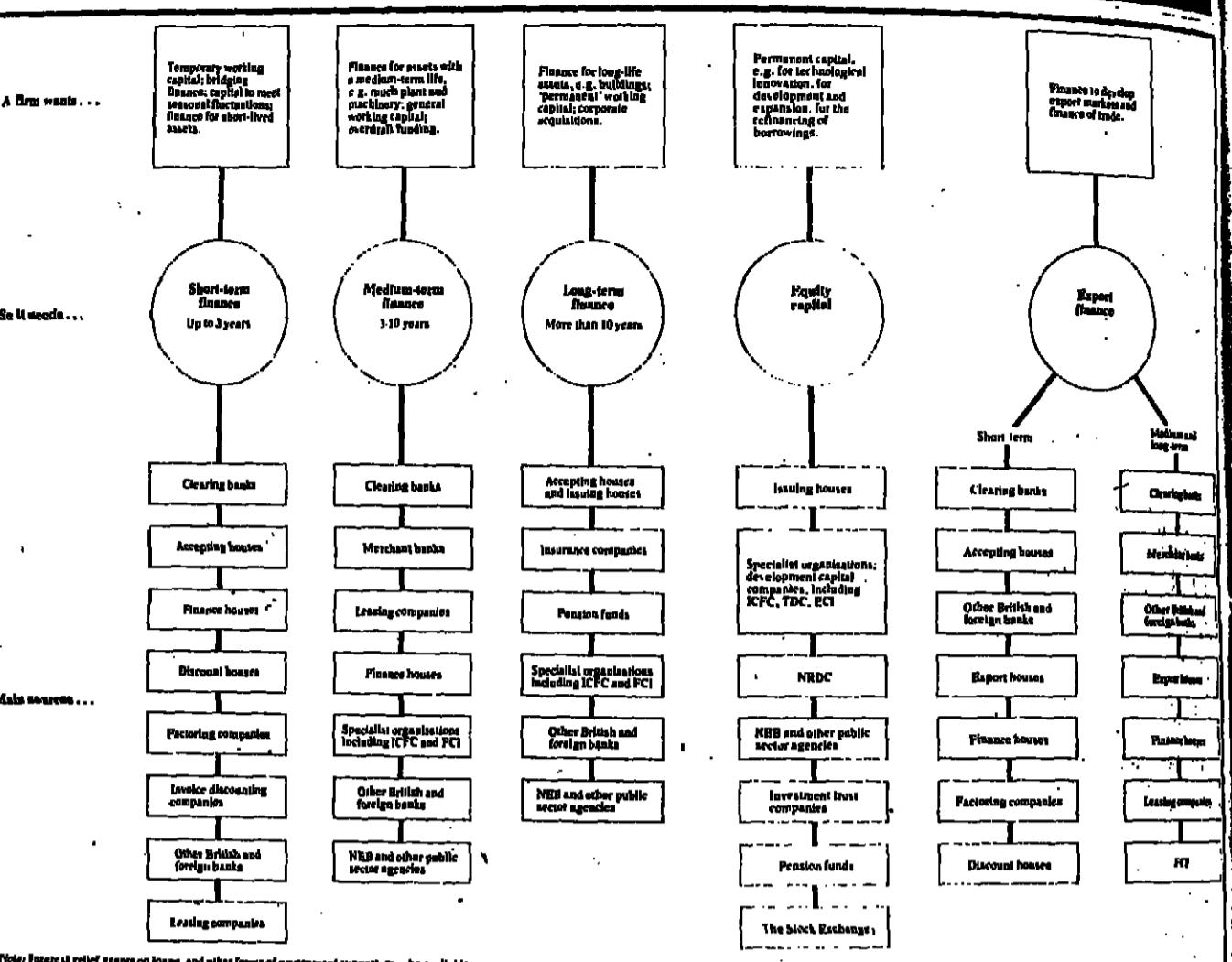
A point David Lowe did not make is that for a small company interested in the booming computer markets of Hong Kong and Japan, Robert Fleming and Co has two of the oldest-established banking offices in the Far East — one in Hong Kong with Jardines, and the other in Tokyo. Connections such as these can be invaluable for contacts in those markets.

One of the most successful recent launches of a relatively small computer company on the Stock Exchange was that of ACT.

The company, based in the Midlands, was first introduced to the world of high finance by way of a limited placing on the Rule 163 (2) market. The 10p shares were offered at 95p, and within weeks had risen to 180p and finally 505p.

At the moment the shares are trading at 142p (following a 2 for 1 scrip issue).

When ACT moved from the res-



Note: Finance and relief grants on loans, and other forms of government support, may be available.

These diagrams are taken from the Bank of England's publication "Money for Business," available from the Bulletin Dept., Bank of England, London EC2.

tricted 163 (2) to the full Stock Exchange listing which the company now enjoys, the shares were placed by Singer and Friedlander, an old-established merchant bank in Cannon Street.

Sir Timothy Harford was the Singer and Friedlander executive closely associated with the ACT placing, and he made the following points about a small computer company which might be thinking about approaching a merchant bank: Firstly, a small company

should not be afraid to approach a merchant bank, but should do so before the need for finance becomes acute. It makes it much easier for a merchant bank if there is a warm-up period during which the bank and its potential client can get to know each other. This gives the bank more time to assess the client company's exact needs. A small company should pick its merchant bank with care and not be afraid to shop around.

By way of preparation, a small company should prepare a prospectus (such as outlined in the last article of this series).

Sir Timothy said that initial contact to a full listing, assuming a company approached a merchant bank while its profits were still under £200,000, could take three

years and profits in the region of £200,000. This should not be seen as altering his initial advice to get in touch early, but was an indicator of the point at which a merchant bank would be most able to help a small computer company.

A merchant bank is usually better geared to understand difficulties and to produce a viable solution.

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MICHIE'S PRIVATEVIEW

Signing off... and looking forward to the new wave



Donald Michie is Professor of Machine Intelligence in the University of Edinburgh.

LAST Privateview contrasted two ways of conferring upon a human or machine recipient the ability to perform a skilled task. According to one way, a causal model is imparted which enables its possessor to calculate the result of performing a given action for any given state of the task environment. According to the other way, a heuristic model maps directly from states of the environment to pieces of advice. Not discussed was any way of getting a model, of whichever kind, into the head of the pupil into the store of the machine. Aspects of this topic will come up in the forthcoming BCS tutorial on expert systems.*

In work on expert systems the method remains that of the knowledge engineer, who programs the best truth-functional procedure he can to embody the expert's own account of each key concept. This process is marginally harder than getting blood out of a stone.

Small wonder that Ed Feigenbaum of Stanford has stated that:

The acquisition of domain knowledge is the bottleneck problem of applications-oriented intelligent agents.

Of course in a sense we knew this already. Is not one picture worth a thousand words, and one shrewd example a thousand pictures? But until good algorithms for inductive learning came along, the would-be inducer of rules from examples was like Shakespeare's Glendower:

I can call spirits from the vast deep! provoking Hotspur's acid rejoinder:

Aye, so can I and so can any man. But will they come when you do call to them?

Today we can at last call concepts from the vast store. Knowledge engineering thus already enters its third phase, analogous to the phases of wheeled carts:

Please 1: Horse and cart (direct programming of solutions).

Please 2: Steam carriage (the "inference engine", logic programming).

Please 3: Internal combustion (inductive inference, "programming by examples").

DOWNTIME

The power of mere humans...

I DETECT a trend. All over the land, people are discovering a wonderful new commodity - human power.

I noticed this most recently in the market at Camden Lock (which considering its look of something left over from the trendy Sixties is hardly the place one would expect to find the latest innovations).

Anyway, there in the passenger way was a juke box with a difference. One deposited 30p (the Camdenites aren't behind the times in keeping ahead of inflation) and all the pointers to the

desired song title. Then the front of the machine, which looked remarkably like it was made of cardboard, swung open, and a human head appeared to render the song.

One might feel that the arithmetic of what ensued left something to be desired, but I was struck by how many system problems were solved by the new technique. The same mechanism that does the singing also receives the money and checks it is sufficient, and can also issue such error messages. One such message came out after a request for a particular song. A belligerent Dalek-like voice

croaked forth: "That one is broken. Please make alternative selection."

It seems to me this is technology with enormous potential, especially in these times of scarcity of raw materials and energy coupled with unemployment. Forget all these silicon chips - let's start building computers with human heads inside.

Undoubtedly another graduate could be the CPU, and those musical half-millisecond memory men could wait in the store. For the prima donna you could use anybody who happened to have good handwriting.

We've had lots of excuses on the lines of "Now that we have a computer we can't..." but inability to do arithmetic is a new one!

British Rail have been unable to confirm or deny reports that they are to introduce trams to take over the cross-Channel ferry service.

Checking up on equipment

I NOTICED in Victoria Station the other day, high up on the right column, a whole battery of closed circuit television cameras. This was not the first manifestation of the arrival of Big Brother brought about by the failure of the Government to introduce data protection laws. The cameras were mounted not by the public but at the train indicator board.

This is a clever Space-age auto-

matical with the station names written on those falling flaps which I am sure I saw work at all. Apparently they often don't. The programming code for setting the cameras up is the same as the TV is saying.

Indeed, I noticed the old cameras at Victoria that used to have a switch attached, card and switch so that poked through the holes to operate or not the individual station panels. I wonder whether the card included writing

on it, "I'm sorry, I'm not a computer".

Good for him for grasping this subtle subtlety, I thought.

He graciously waived the extra entry charge, but I was left wondering why it is that these little variations, that most customers won't notice, always seem to benefit him?

This is a clever Space-age auto-

FOCUS

Friendly relations among the new technology

These topics have from time to time been ventilated in this column. Will they not be ventilated longer. After unbroken enjoyment of Computer Weekly's hospitality and the excellent company of its readers, Privateview is signing off.

It is almost four years ago that Malcolm Peltz and I first concocted my role, and I have enjoyed it to the full. Malcolm was then Editor of Computer Weekly. He shared my view that important sectors of the computing front in the UK had been held back by well-meaning troglodytes of the science establishment, reinforced by timidity of management in the computing industry and a lack of information among practitioners about certain new directions.

The Trojan work of Malcolm, and his colleagues and successors on Computer Weekly, together with tireless pressure from many others of the technical Press, in industry, in university and government computing, and in Parliament has at length brought returns. Although there is far to go, the information technology scene in Britain has changed notably for the better.

Among the consequences has been the appearance in my own field of enablement chances for contributing more concretely than by holding forth from the top of a column. I mean resources to conduct research.

Donald Michie

"BCS Expert Systems Tutorial (lectures and demonstrations)", London, Thursday, June 4, 10.00-17.00. Cost £30 for BCS members, £40 to others. Contact: Mr B. Müller, 12 Octagon Grove, Maidenhead, Berks. Tel: 0628 39101.

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But will they come when you do call to them?

10 YEARS AGO

From Computer Weekly of April 1, 1971...

DEC announced two new hardware systems for use in laboratories, a PDP-12 laboratory data processor which can accept data from up to eight instruments at one time, and the ALCHYMIST 15, based on a PDP-15/35 computer...

The National Police Computer, designed to provide answers to police inquiries within seconds, would cost £7 million, the Commons was told. The system, to be housed in Hendon, would be linked to a Swanssea computer...

Control Data Corp has introduced the Cyber 70, and the new machine should be available by the first quarter of 1972.

Speaking at the opening of Datafair 71 at Nottingham, Alex d'Apogayoff, president of the British Computer Society, called on the government to act to improve the climate of opinion towards computers.

Meanwhile, many micro users

are the DPM who traditionally views his configuration with a mixture of awe, respect and apprehension. Kicks rather than pats are the acknowledged methods of treating the reluctant printer, grotty disc drive and temperamental CPU. Affection is more likely to be shown to the shift leader who, despite immense odds, managed to produce the monthly turnover statistics only 24 hours late, or to the senior programmer for surrendering yet another weekend for the good of the computer cause.

The banks, it seems, are rapidly moving towards user friendly automatic tellers and associated visual displays. But it is doubtful if the customer will get a user friendly message along with the news that the user's account is in overdraft mode and no further funds will be available. Any further attempt to extract funds will meet such user unfriendly devices as steel-lined door traps and electronic shock key buttons.

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PROGRAMMERS PAGE

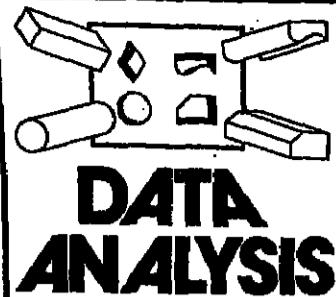
This week Michael Hunt, of MSA International Inc, urges less attention be paid to clumsy in-house software

Package up all your accounting troubles

IN the 1960s most mainframe systems were cost justified primarily on the basis of expected benefits in financial and accounting applications. Now, however, the computer is rightly being regarded as a corporate resource which must earn its bread and butter in a variety of activities that are at the core of an organisation's success, such as order entry, production management, stock control and customer support systems.

The price of computing power has fallen and as the benefits of online systems and distributed processing have grown, the DP department has come under increasing pressure from line managers to satisfy their particular needs. At the same time, the traditional financial accounting tasks have to be maintained through a variety of hardware upgrades and legislative changes.

Scarce DP resources can be tied up in wrestling with accounting software that has become clumsy and difficult to modify as a result of years of ad hoc development. So DP managers throughout the world are growing increasingly aware that their resources should be focused on more front-line applications.



DATA ANALYSIS

Making the transition from the old system to the new

ONCE the database and the application have been designed, attention must be given to how the existing systems can be converted to or interfaced with the new system. This task is known as transition analysis; during a transition period both systems are likely to be run in parallel. The main stages of transition analysis are as follows:

- Draw data models of the existing systems and hence produce definitions for the data items in the existing files.
- Identify the functions supported by the existing systems, by analysing specifications of the batch and online transactions.
- Compare the existing data with the required data.
- Compare the existing functions with the functions covered by the new system.
- Draw up a conversion strategy, which defines the interfaces required, the conversion programs required, the changes needed to existing systems and the timing of all these tasks.

First, data models have to be drawn.

In our experience, the entity model of the systems to be converted will be different from the one produced by entity analysis. This is not a sad reflection on the standard of systems analysts of the past, but is the result of restrictions which operated when the systems were designed.

Duplication over more than one system causes the most headaches because it ends up as a political problem.

The areas under analysis were usually more severely restricted to applications. In other words, there are likely to be several old entity models for the one new entity model.

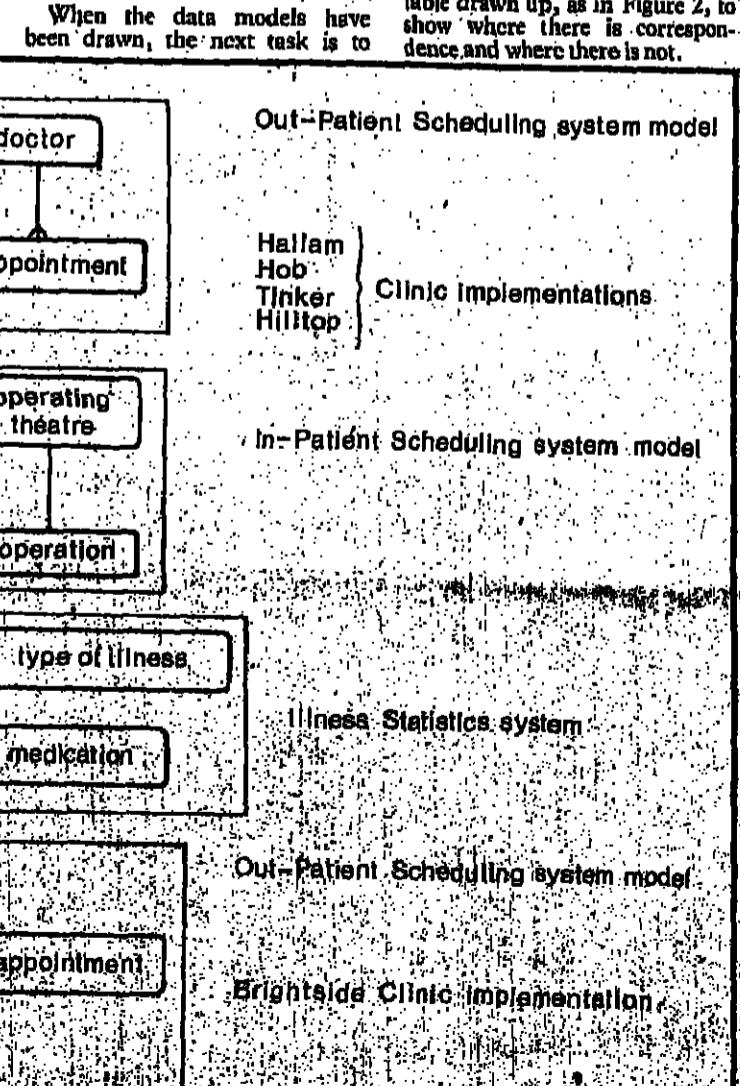


Figure 1: Existing hospital systems

There is also likely to be a good deal of duplication of attribute types, and embedding of attribute types of entity types within other entity types, simply because a system specification is usually available which describes the functions, even if the description may require some analysing to work out what the functions in the old systems are. The study of the systems specification will also enable the analyst to define the derived attribute types within the existing systems.

This is not as difficult a task as drawing the entity models for the existing systems, because a system specification is usually available which describes the functions, even if the description may require some analysing to work out what the functions in the old systems are. The study of the systems specification will also enable the analyst to define the derived attribute types within the existing systems.

In Figure 1, the existing hospital systems are shown. There is an Out-Patient Scheduling system, an In-Patient Scheduling system, and an Illness Statistics system. As can be seen, "Patient" is duplicated, in each system.

2. The old systems are usually written for conventional files. Because of the structuring limitations of these files, the systems analysts usually designed files which did not fully support the entity model (had one been prepared), by inserting entity types or embedding attributes within related entity types. Where entity types were missing, the additional work which resulted had to be coded into application programs or performed clerically.

In Figure 1, Theatre Sessions and Clinic Sessions are missing from the models of the original systems. This may have been deliberate or due to incomplete analysis, but the result is that no data is available from within the existing systems on these two entity types.

3. Often, a new system will encompass not just several different existing applications, but several existing implementations of applications. In other words, the functions of the systems are the same or similar, but different systems exist – usually for historical, organisational or political reasons.

In our example the Out-Patient Scheduling system has one model which covers the Hallam, Hob, Tinker and Hilltop implementations, but a different model for the Brightside Clinic. Again, the more restricted the view of the analyst, the more likely the old model is to diverge from the new entity model.

When the data models have been drawn, the next task is to show where there is correspondence and where there is not.

Figure 2

Existing system	New system
File name	Data item name
OP-APPTMT	OP-CLINIC
OP-APPTMT	OP-APPT-
OP-PATIENT	OP-NAME
OP-APPTMT	OP-NAME }
OP-PATIENT	OP-DOR
OP-PATIENT	OP-DOCNAME
IP-OPERA-	DATEBIRTH
TION	H-DOCTOR
IP-ATTEND	DOCNAME
	IP-DOCNAME

Figure 2

The results of these two stages are the entity model for the existing systems, a list of the functions supported by the existing systems and a definition of the attribute types in the existing systems.

At this stage, no account has been taken of the file structures of the existing or proposed systems or the actual programs used to implement the functions. The next stages in transition analysis make – usually for historical, organisational or political reasons.

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When the data models have been drawn, the next task is to show where there is correspondence and where there is not.

Which system holds the correct details? Let the users fight it out.

This is a user problem – it may require him to generate the data from scratch (much as he may object) and ignore the fact that data values do exist.

The second problem concerns duplication of data items over several record types within the one system. For example, in our Out-Patient Scheduling system, patient details may appear not only in the patient record, but in the appointment record, and several other transaction files or even interface files from other systems.

The question here is: which file/record type is likely to be the most up-to-date and correct? This can normally be worked out from the system specification, although I have known cases where this has also required the user to generate data from scratch. Where the system team has labelled a file "master file", it is usually a good indication that this may be the best source.

Duplication over several related types over more than one system usually causes the analyst difficulties, simply because it ends up being a political problem as well as a data problem. At every user is convinced that his data is more correct than anyone else.

The problem arises when the data items describing an entity

type occur in different existing systems, where the entities within that entity type are represented also within different implementations.

For example, appointments would cause us no problems as they are unique to a clinic, but patients would be a problem, as a patient can visit more than one clinic and also attend for operations. The same patient record could thus occur within the files of all the different systems.

What problems are there likely to be?

● Data items whose values are simply wrong. In other words, the items may be present, but their contents are of dubious worth be-

cause the analyst did not recognise that he was dealing with entity types, since his view of the business was so narrow.

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The problem arises when the data items describing an entity

Section II – Part 4 of our series describing system design methodology

by Rosemary Rock-Evans

PEOPLE

Industry veteran collects his OBE

DAVID CAMINER, who was one of the few non-administration people from the computer field to be awarded an OBE in the New Year Honours List, was invested last week.

Caminer began working with computers in the late 1940s when, as manager of systems research at J. Lyons catering company, he selected and delineated the first application for the Leo computer. It is thought that this was the first routine commercial computer application in the world. When in 1975, Lyons became an equipment supplier and Leo Computers was formed, Caminer became a director.

After a succession of mergers that culminated in the creation of International Computers, Caminer continued to hold top-level posts.

As project leader for ICL he was responsible for installing a large computer system and communications network for the BEA and getting it into operation, until the Community took over responsibility for the system in February last year. He is now an independent consultant.

available as to how detailed a comparison is, and to what are the purposes listed are satisfied.

It may be necessary to pass quite detailed functional analysis of the old systems where degrees of the systems and definitions of the attribute types are complex.

The final phase of transition analysis is the drawing up of a conversion strategy, or plan of action. This should contain the following information as a minimum:

● Extra information may be required depending on the type of conversion required, etc.

● Managing director of Aydin Controls/Vector UK.

■ Dr Norman Schofield has been appointed technical director of Compedita. He was previously manager of the company's industrial engineering division.

■ Stephen Raine has been appointed senior assistant county treasurer and head of computer services at North Yorkshire County Council. He has been with the company for just under a year, and before that held sales positions with Nixdorf Computers and Saab Scania.

■ George Isaacs has been appointed vice-president of European operations at Aydin Controls. He will continue in his present job as managing director with the Authority.

DIARY

APRIL 6

The electronic office of the future. BCS East Anglian branch, Eastern Electricity Central Accounting Offices, Russell Road, Ipswich, 7.00.

Minifame or linked minis? BCS Hampshire branch, Stimpact House, Shefield, Southampton, 7.30.

4. The amendments required to the existing systems to cater for the conversion process.

2. The data items required for other sources and the method of acquiring that data (data capture).

3. The parts of the existing systems which must be re-used and defined to fit into the new system and the amendments which may be needed to the systems as a result.

5. The amendments required to the existing systems to cater for the conversion process.

6. The strategy for providing a new system: parallel running, direct changeover or pilot running.

7. The partitioning of the conversion – which functions are going to be implemented as one group, whether the conversion will be carried out in each implementation of the new system or by all systems and so on. The results of the function analysis of our existing or new systems will help in this regard.

8. The timing of the conversion. This is very important as much time is required, for instance, to get the possible over any length of time.

The decisions are likely to be based on the resources available, people, machine time, volume of data, etc.

APRIL 14

Does the Chip Mean the Chop? BCS Merseyside branch, Faculty of Science Lecture Theatre, Liverpool University, 6.00.

APRIL 14-16

Second London Computer Fair, Royal Holloway College, Egham, Surrey, 10.00.

Technical update – the data base experience. BCS North West London branch, Railway Hotel, Greenford, 7.45.

Computers in banking. BCS West Herts branch, The Culpin Room, Watford, 7.30.

APRIL 19

Meeting, IBM Guide Set Group, IBM, Basingstoke Street, London EC2, Details Alan Peck, tel: 01-828 8104.

APRIL 20

The Union View, IDPM Scotland, Strathclyde University Staff Club, 7.30.

Gordon Freeman has been appointed technical marketing manager with Control Data, has been appointed marketing manager at Lambart Computing.

■ Anna Bailey has joined Adroit Systems as systems manager. She was formerly senior systems analyst at British Olivetti's data processing division in Coventry.

■ Jonathan Bacheller has been appointed director of European operations at Athena Inc. He joins the company from Noshua in France where he was responsible for OEM and distributor sales in Southern Europe and North Africa.

APRIL 29

Experience with new database products, BSC Database Specialist Group, Room G6, New Engineering Block, University College London, 2.00.

APRIL 8

Air traffic control. BCS Belfast Branch, Queen's Common Room, Belfast, 10.00.

APRIL 14

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JOHN Butcher, MP for Coventry South West and vice-chairman of the All Party Committee on Information Technology, opened a Computerstore in Halewood, West Midlands. The store is owned by ACT (Holdings), the UK computer bureau, and aims to sell "everything the serious computer user would want," from complete business systems to stationery ranges, ribbons and printwheels for printers, word processors, and books, magazines and manuals. Among the staff are analysts, programmers and electronic engineers to give advice to users and potential customers. Computerstore is at Shenstone House, Dudley Road, Halewood.

■ Geof Gibbons has been appointed package marketing manager at Ventek Computers. He has been with the company for seven years, serving as regional support manager in the North of England.

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Alan Simpson reviews two works on management and an encyclopaedia of terminology

Taking luck out of systems management

Managing Systems Development by Jeffrey Keen. 343pp. John Wiley & Sons.

FEW aspects of DP management are more intangible or intractable than managing systems development. As an art it is highly abstract and as a responsibility it is often a complete disaster area.

Fall-out comes down not only on the DP management team but possibly on the company as a whole as user application implementation schedules are missed or disappointed expectations.

For many DP managers systems management is a matter of keeping fingers crossed, hoping for the best and trusting to luck. The objective of this new book is to take luck out of the project, replacing it with a formal structured approach.

Author Jeffrey Keen is a disciple of heavily scheduled and phased development. Each project is defined in terms of man days' effort based on an optimum number of

standard men and Keen suggests that compiling a detailed list of activities and resources could well take an experienced manager several weeks.

In many installations, schedules and estimates – whether compiled over a period of days or weeks – get blown off course on day one when the project leader resigns, the user department involved changes its collective mind, or the MD determines a higher priority for an alternative application.

The author falls into the common pattern of regarding people as resource factors rather than individuals while equipment is guaranteed non-failable. In this rather surprising latter respect the book takes for granted that the hardware supplier could have an overseeing role, monitoring management and technical performance.

The IDPM would like to hear of any instances where this "supervision" does take place. However, the author does place much stress on the fact that only firm project management will produce results. Keen's style drifts frequently into that of lecture notes, the author lapsing into such expressions as "now we see", "let us examine" and "up to now".



He is obviously a DP man of many parts, billed as an independent consultant, head of a successful computer consultancy and an employee of I.T.T. The book is produced in the Wiley series on Information Processing and is certainly one of the most thorough on the subject.

It benefits from being an English publication, a welcome diversion from the many similar text books cascading from the US. The book is well illustrated with many useful appendices, checklists and index.

A.S.

Dated but useful technical guide

Micropocessor Background for Management Personnel by James Arlin Cooper. 163pp. Prentice-Hall Inc.

FOR a book with abundant explanatory notes, diagrams, indexes, indices and glossaries, it seems strange that no attempt has been made to explain the title.

Close investigation reveals that the management personnel involved are potential technical managers who have, or rather will have, a responsibility for managing technical people.

If this is the case, the publishers could have got it wrong. The book would seem to be suitable study material both for technical managers and their technical staff.

The book is well produced despite some rather fuzzy pictures which give it a rather dated air, with mag tapes being featured more than disc drives, and chip boards preferred to micro chips. Possibly with the management level readership in mind, the text

is kept fairly basic with advanced mathematics at a minimum. The microcomputer applications of microprocessors get scant coverage. According to the author, a large computer is typically room-sized, a minicomputer is smaller and a microcomputer about desk size.

A further identifying factor is that the large scale computer could cost millions of dollars, a minicomputer tens of thousands, and a microcomputer thousands.

The author suggests that a major use of microprocessors is in playing Pong or Star Wars. The diligent reader should be capable of designing and producing an electronic game on finishing the book.

As expected, much space is given to systems, design and programming techniques. For such a compact book, a surprisingly large amount of related information is included, covering topics like Social Impact and magazine listings.

A.S.



courses, examinations, and career options; and an authoritative range of reviews – of equipment, software, programs, and books currently on the market.

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does start right at the beginning, with advice on raising the finance for your hardware, and how to be sure you're choosing the right system for your needs.

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This unique magazine will offer penetrating investigations into the educational applications and implications of data processing systems. Full details of available

Could be industry standard

The Concise Encyclopaedia of Computer Terminology by Dr Adrian V. Stokes. 290pp. £15. Gower Publications.

PUTTING together an encyclopaedia on computer terminology must be a particularly thankless task as the subject of computer science is evolving at a zapping (a semi slang term used to denote amendments) pace.

Only an Oracle (Optional Re-

ception of Announcements by Coded Line Electronics) could determine which terms will last a generation (a file label) or a micro (prefix indicating one millionth) moment.

The book is a cross between an encyclopaedia, a dictionary and a reference document. It is also rather a lucky dip containing potted histories of IBM, Honeywell, NCR and Univac, but not Burroughs. Light pens are featured but not laser printers.

We learn that PET stands for Personal Electronic Transistor, the Cambridge Ring is not the scene of the latest Tolkein saga, and Bar Code is not a method of attracting attention at the local.

Compiler Dr Adrian Stokes has a background derived from Hatfield Poly, and Langton Information and makes it clear that he is as much at home with programming languages as with teletext technology.

Ada, Arpanet and even a pleasant-sounding algorithmic language Joyval, receive full coverage while viewdata hits the narrative jackpot. While not quite coming into the bedside book category, the encyclopaedia is certainly well worth a browse.

Nagging, for instance, is not the working mood of the shift leader but an acronym for Numerical Algorithms Group. SOS is not the ultimate cry for the file service engineer but a reference to Silicon Tax. Sapphire. This is described as preventative maintenance, phase modulation and – rather dramatically – as Post Mortem.

The Concise Encyclopaedia deserves to become an industry standard book.

The book is designed specifically to bridge the credibility gap. It will appeal to DPM in its defining role, industry telecommunication specialists, and aid the first time user faced with a mass terminal. It may assist by hopeful readers.

RAEED PERKOVICH

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and study – of computers and their peripherals in schools, colleges and universities.

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PRODUCTS



The Sintrom VP800/B Video Processor with 28-character display.

Variation on micro melody

Musical Applications of Microprocessors by Helmut Claußner. 661pp. \$24.95. Hayden Book Company.

THE TITLE IS somewhat misleading; whoever chose it was seduced by alliteration, or assumed that any book with "microprocessor" in the title would sell automatically.

Chamberlin deals with the software and hardware techniques needed to synthesise music electronically and microprocessor certainly figure in the process, but so do many other things.

A further identifying factor is that the large scale computer could cost millions of dollars, a minicomputer tens of thousands, and a microcomputer thousands.

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A.S.

VDU terminal has 28-line display

SINTROM Electronics has introduced the VP800/B Video Processor, an intelligent VDU terminal with a maximum display capability of 28 lines of 132 characters.

Manufactured by Direct Inc., the VP800/B can be programmed to emulate popular terminals, including DEC's VT-100, while offering a wide range of enhancement features in comparison with these terminals.

Besides the 28 line x 132 character display, the VP800/B also provides a 24 line x 80 character format. Resolutions of 6 x 10 and 10 x 12 respectively with a 7 x 9 character dot matrix ensure a legible display.

Characters can be displayed double height and double width, and line drawing characters contained in the standard character set allow the VP800/B to be used for form generation, business graphics and scientific presentations.

User-defined graphic characters can expand further the diversity of screen presentations.

A split-screen mode allows the display to be divided into two areas permitting the operator to receive status or prompt information in one area while entering data in the other.

Forward or reverse smooth scrolling is at 3 or 6 lines/second and the standard 4K memory will store 3 highest-density pages under the control of a dynamic memory manager packing text at

the single unit price of £1,395 and delivery is currently four weeks.

Sintrom Electronics Ltd (CW), Arkwright Road, Reading, Berks. Tel: (0734) 85464/84322/863417.

Alarming facet of silicon

The Silicon Chip Book by Peter Marsh. £2.50. Sphere Books 1981.

"YOU cannot fight against the future" said William Gladstone in 1886, a statement equally true in 1981. But we can try to choose the best option out of the possible scenarios that may develop.

In this book, Peter Marsh follows up well-written popular science discussions of microelectronic technology and application with a dive into the speculative areas of consequences.

As unemployment heads for an early three million, uneasy "technofascies" of the electronic revolution may be less concerned with the technico/scientific expansion and show rather more interest in the discussion of ways in which computers can create jobs.

Both versions print at 75 chps, weight about 25 lbs, have a 7 x 9 matrix print head and transmit/receive data to 110, 300 or 600 baud.

The 240 is also designed to be used as a terminal for time sharing systems as well as an input/output device for micros and microcomputers. It uses a cartridge ribbon and costs £350 to £41,070 for the KSR version or between £730 to £895 for RO.

It also incorporates what it calls bidirectional printing with 9 x 12 characters wide friction

from existing jobs.

I liked the author's classification of broad directions in which the country could steer which are summarised neatly under four heads:

1. patchwork – go-for-growth

2. recession

3. stagnation

4. decline

with recording density control and head selection for double-sided discs.

Data formats may be IBM

3740/GFM

pr

34/MFM

or custom format.

Disc systems require the data to be in the normal form and the controller should also be able to perform the serial-to-parallel and parallel-to-serial conversions.

The Aller disc controller is based on the Aller Services (CW) High Speed Aller System. Tel: (0208) 241444.

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Due to equipment upgrade the following equipment is available: (All DEC equipment maintained).

★ PDP11/45 UB Processor

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Offers around £20,000 to:

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Including: 512 kb memory

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1 x 300 lpm printer

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Recruitment **LOGISTIX** In Informatics**Pascal Programmers**

London & Home Counties: Salary to £10K

A leading supplier of microprocessor development systems has an urgent requirement for Programmers to participate in its advanced compiler development project. Whilst our client has a strong preference for respondents with a knowledge of PASCAL, candidates fluent in any technically orientated high-level language are encouraged to apply. It is essential for all applicants to demonstrate a knowledge of Structured Programming techniques and to have worked on mini- or microcomputer-based systems. These vacancies will strongly appeal to talented, career-minded individuals wishing to enhance their technical skills in one of the most challenging areas of the data processing industry. Ref. L14/A

Technical Authors

Home Counties: Salary to £10K

Excellent opportunities have arisen for Technical Authors to join a market leader in the manufacture of mini- and microcomputers. All respondents should demonstrate a good command of the English language and have the ability to communicate with people at all levels. Suitable candidates will probably have designed and written user documentation for a Data Systems Software product. Ref. L14/B

Communications Software

Southern Germany: Salary to £15K

Communications Engineers from Programmer/Analyst to Team Leader level are urgently required by one of Europe's leading suppliers of communications equipment. Software development teams, based in their R & D Headquarters, are currently engaged in the design and construction of an advanced telephony system based on Intel 8086 microprocessors. All applicants must possess at least two years' real-time software development experience on any leading mini-or

Ref. L14/C

Financial Applications

Berkshire: Salary to £13K + Car

Our client is a U.S. parentage having its headquarters close to extensive motorway and rail facilities in Berkshire. As a result of increased sales of its financial management systems the Company is now seeking additional Financial Analysts and Designers to act in both pre- and post-sales environments, where analytical design skills are essential. Successful candidates should be aged 28-33. Ref. L14/D

IBM Systems Engineers

London and E.E.C.: Salary to £20K

Several IBM-oriented Systems Engineers are sought for the Customer Support Division of a leading supplier of DBMS and T.P. Software products. Extensive knowledge of at least two of the following is essential: CICS, IMS, TOTAL, IDMS, MVS, TSO, ENVIRON or SHADOW. Such exposure will preferably have been gained during the Ref. L14/E

Cobol Programmers

H. Counties/Holland: Salaries to £13K + Car

A leading Systems and Software House, which has expanded rapidly over the last 5 years, currently requires Programmers for both its U.K. and Dutch offices. Applicants should be graduates with a minimum of 3 years COBOL and/or BASIC programming experience on the mainframe, mini- or micro-systems. Working as a member of a small team you will be involved in the development of bespoke software for various clients, including major computer manufacturers. The company offers outstanding benefits including 14 months' salary per annum, a company car, an annual bonus and an opportunity to purchase equity. Ref. L14/F

Graphics Applications

Thames Valley: Salary to £10K + Benefits

A market leader in the manufacture, sale and support of graphics terminals and instrumentation devices has a requirement for Systems Programmers and Applications Support Consultants. An in-depth knowledge of either FORTRAN or Assembler is mandatory. In addition our client seeks current post-graduate involvement with CAD/CAM techniques for at least one year. All positions will involve a degree of national travel and, in certain instances, a Company car will be provided. The Company offers a highly attractive remuneration package, including a non-contributory health and medical scheme. Ref. L14/G

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(0041)

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We are looking for an experienced Data Processing Manager aged 28-35, preferably a self-starter, interested in Systems Design and Development, and have a co-operative approach in dealing with staff and functional management.

As Application Engineer you will report to the General Systems Manager. Your responsibilities will include technical and financial support to Zilog's European Sales organization and customers on the Company's general systems products. You will provide training, technical seminars, application notes, competitive analyses, sales aids and other promotional material. Some European travel will also be required.

1) RPG II Programming and Systems Analysis utilising an IBM System 34 with remote terminals

2) Supervisory experience in Data Processing - 3 or more years.

3) Telecommunications experience

In return we offer the chance to join a fast-expanding Group with excellent prospects, an attractive remuneration package of a starting salary around £8,600 and a company car.

Please apply in complete confidence, submitting curriculum vitae to:

Mr. K. Snelgar, Chief Accountant, S. H. Camp & Company Ltd., East Portway, ANDOVER SP10 3NL (closing date for applications 10th April 1981).

(0051)

years and possess an outgoing personality since these positions entail a large amount of user contact at both board and technician level. Technically, you should offer expertise gained in a Banking (Retail or Merchant), Stockbroking or Accounting environment with a large-scale IBM user or Systems Supplier.

Ref. L14/H

The City Council is a large local government computer user. We service a range of applications on 2000 computers using DMS and VMS, and data management products.

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We seek a person who is capable of occupying a key position as head of one of these teams. This involves:

• taking full responsibility for the development of a range of related applications, including feasibility, and planning and maintaining development schedules.

• directing the activities and developing the skills of all staff assigned to the unit.

• acting as computing consultant to the Council's accountants.

The person we want will certainly have experience computing for several years and on the development of a variety of applications. We have been asked to interview the best one v.p. (very important project) idea, and will know all there is to know about local government, finance and accounting, ECL hardware and software, access to systems, new technology and man management; but we would expect any of these in the job specification.

Our service conditions include generous annual leave and a comprehensive relocation package in appropriate cases.

R.N.C. is the only College of Further Education for the visually handicapped in the country. It is mainly residential and the present number on roll is 168.

Please apply in writing, with full curriculum vitae and the names of three referees, to: The Principal, Royal National College for the Blind, Marshall, M.A., Royal National College for the Blind, College Road, Hereford HR1 1EB. Further particulars may be obtained (0432 68729).

(0069)

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at The Royal National College for the Blind, Hereford

A Lecturer is required to help establish and run a new Department of Computer Studies in the College. The person appointed must have commercial or industrial experience in the computer field and will probably be a graduate in Computing or a related discipline. Teaching experience would also be an asset. The appointment will be at an appropriate point on the Head of Department Scale 1+1/1% Burnham F.E. 0339-1570.

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Our Client, an Internationally recognised consultancy require a number of experienced technicians to work on the development of major Aircraft Simulation systems. Candidates should have a degree or equivalent with at least 3 years real-time software design experience and have the confidence that stems from total familiarisation with the unique and often multi-million pound devices associated with this technology. Whilst abroad you will enjoy good overseas allowances as well as the excellent basic salary.

Contact: Margaret Stevens

Sales Consultants**Essex/Birmingham****c. £13K+ car**

A leading nationwide bureau organisation is seeking experienced Sales Executives to contribute significantly to current expansion plans and develop their own customer base. You will be responsible for selling the bureau's wide range of data processing services, including application packages, terminal enquiry facilities and bespoke systems. Main preferred qualities sought, are a sound understanding of business problems, a proven sales record in a related field, and ideally, a background in accountancy or business systems. Targets are very realistic, and achievable, for salesmen with energy, initiative and the enthusiasm to succeed.

Contact: Brian Postles

Project Leaders**London/Europe****£12,000+**

An internationally recognised systems house are looking for Project Leaders to be based in London, but who are prepared to undertake overseas travel and assignments. Projects incorporate message-switching systems, new developments in networking and automated offices. Experience must consist of at least three years design and implementation of software for data communication systems, project leading on complex real-time systems with a communications content and understanding of operating systems, interface and protocol software. Knowledge of drivers and emulators would be a definite advantage.

This is an excellent opportunity to join a well established organisation and enjoy working in an environment which offers interesting projects, European travel and good financial rewards.

Contact: Janet Chivers

Project Leaders/Senior Analysts**West London****to £12,000**

Our client, a market leader in the manufacture of all levels of computer hardware and software, requires professionals to strengthen their product development teams. Specialising either in financial or general business systems you would be responsible for design, analysis and the control of programming and implementation. Applicants should have 3-4 years COBOL in a commercial environment, have been involved in a total project and be of degree standard. Man management and inter-personal skills are of equal importance. Opportunities for progression are genuinely excellent and are dependent purely on individual abilities.

Contact: Brian Postles

Product Support Manager**c. £9,000+ Car**

Sveda International, a division of Litton Industries, are market leaders in the challenging field of advances and electronic point of sale cash systems and are currently seeking a product support manager to head their expanding systems team responsible for pre- and post-sales support.

The successful applicant will be aged 28-35 and have a systems and programming background preferably with experience in the field of telecommunications. A pre-requisite will be a mature outlook, the flair and communication skills to deal with an expanding customer base, and the desire to succeed in a highly marketing orientated organisation. Normal benefits coupled with an attractive salary complete the package.

Contact: David Hendry

Analyst/Programmers**£7 - £10,000**

Due to the securing of major contracts this organisation, specialising in the development of advanced engineering software, is recruiting experienced Analyst/Programmers to join a newly formed development unit concerned with all aspects of the design of chemical plant.

Applicants should have a proven ability in Fortran preferably with a background in Mathematics or Engineering. Experience in computer graphics and/or databases techniques would be of particular relevance.

Contact: David Hendry

**Communications Programmers
- Babbage****£8,000 - £9,000**

Continuing expansion of our client's international Videotex business has created opportunities for GEC 4000 Babbage programmers in real-time and network systems, including packet switching, colour and business graphics. In this fast moving and exciting field, possible overseas travel.

Contact: John Baker

**JAMES BAKER ASSOCIATES,
International Personnel Consultants,
32 Savile Row, London W1.
Tel: 01-439 9311.**

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**Support/Development Staff
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PACKAGE UP TO £16,000**

Pansophic Systems (UK) Ltd. requires more technical staff to support its continued expansion in the UK last year and our current plans are very ambitious.

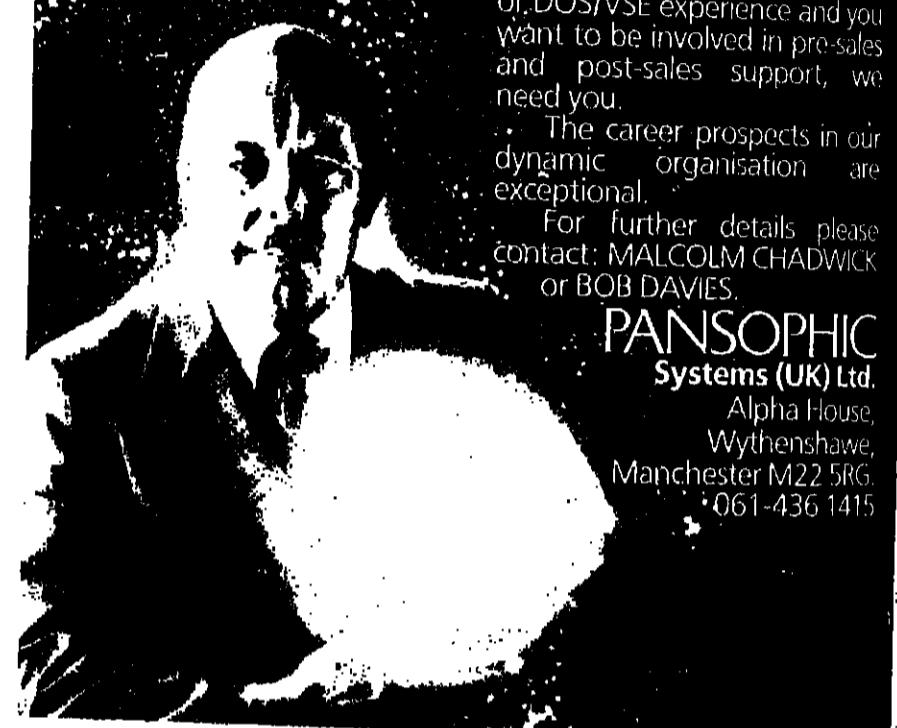
The sales of our systems software products: EASYTRIEVE, If you have good knowledge of our products or OS, MVS, or DOS/VSE experience and you want to be involved in pre-sales and post-sales support, we need you.

The career prospects in our dynamic organisation are exceptional.

For further details please contact: MALCOLM CHADWICK or BOB DAVIES.

**PANSOPHIC
Systems (UK) Ltd.**

Alpha House,
Wythenshawe,
Manchester M22 5RG.
061-436 1415



EXCELLENT CONTRACTING OPPORTUNITIES

Our immediate domestic and international consulting needs are detailed below. If you are of a professional disposition, skilled and dedicated, and wish to join our growing permanent or contract staff, please contact us in respect of these and future opportunities.

International**System 34/COBOL****MARK IV****IBM/COBOL****IBM****IMS or TOTAL****U.K.****MARK IV****COBOL/CICS/DL1****ASSEMBLER/****CICS/DL1****RPG/System 34****IMS****COBOL/UNIVAC/****EXEC****HP3000/COBOL**

**Consultants and
Programmers
Consultants and
Programmer/Analysts**

**Senior Analyst
Analyst and
Programmers**

**Programmers/
Analysts
Senior Programmer
Programmer**

**Programmer/Analyst
Designers, Analysts,
Programmers**

**Programmer/Analyst
Designers, Analysts,
Programmers**

**Programmer/Analyst
Programmer/Analyst**

**Programmer/Analyst
Programmer/Analyst**

For more information telephone:

**ALAN JEPHCOTE
TANDEM COMPUTER SERVICES
102/106 Bowes Street
Woodford, Essex IG8 9AB
Tel: Romford 714221**

Senior Analysts

Pkge £10-11,000**NORTH-EAST LONDON****New Database Projects—4 year
development plan on ICL 2956****Benefits**

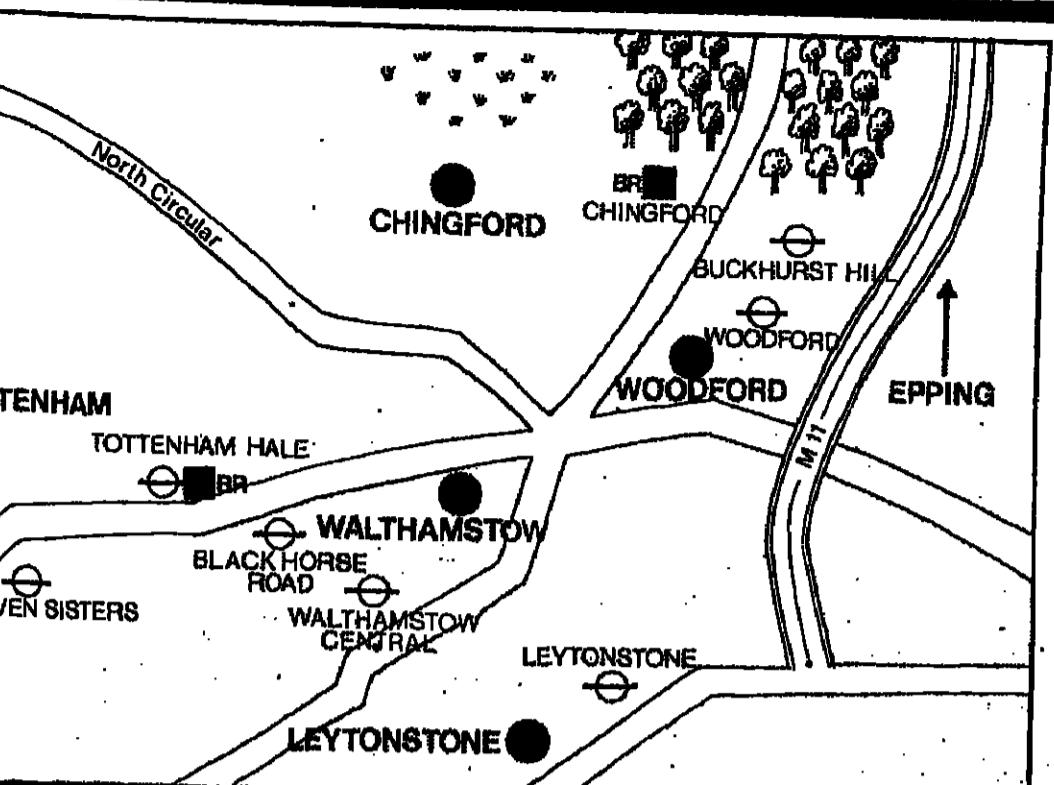
- Over 5 weeks Holiday
- Flexitime
- Subsidised Restaurant
- Sports & Social Club on site
- Free Car Parking

The Environment

Good office conditions, a friendly working environment with cooperative, committed users.

The Job

To lead a project team of around five analysts and programmers, carry out feasibility studies and control a wide range of new database projects through to implementation.

**The Requirement**

Database and ICL experience is not a pre-requisite since training will be given. You will however, need the technical skills and background to advise, help and direct users, plus the man management skills to lead a medium sized team.

Action

Telephone or write to CAPP Associates, quoting ref: CW111-1T, they will provide you with additional information. All interviews will be conducted at the client's premises in North London.

**CAPP
ASSOCIATES**
01-686 9693

Capp House, 96 South End, Croydon CR9 3SD

Computer and Professional Personnel Consultants

Programmers**BIGGLESWADE****£5,500-£8,500 plus bonus**

We are looking for people with a minimum of 1 year's proven programming experience preferably in one of the following areas:

- ★ ICL 1500/BTL
- ★ ANY M/C ASSEMBLER
- ★ ANY M/C BASIC

All successful applicants will demonstrate that they have the potential to develop their own skills and the more experienced applicants must be able to work with the minimum of supervision whilst providing assistance to other programming staff.

BECOME PART OF OUR SUCCESS STORY**PICK UP THE TELEPHONE NOW**

Contact either: Alan Jephcote or Bill Brett,
Lloyds Bank House, 39 High Street,
Biggleswade, Beds.
Telephone (0767) 316286

THE UNITED KINGDOM ATOMIC ENERGY AUTHORITY Computer Scientists For Oil Reservoir Applications

The Winfrith establishment is a major user of computers for research and development in the United Kingdom. Large scale numerical studies on oil recovery utilise a mainframe configuration at Harwell consisting of a dual IBM 3033 which is shortly to be enhanced by the addition of a CRAY processor. A Perkin-Elmer minicomputer is based at Winfrith in communication with the mainframe to drive a number of advanced graphics devices, including colour graphics. A dual ICL 2976 mainframe system is also available on the Winfrith site.

The successful applicants would undertake software developments in support of scientists engaged in the large-scale computer simulation of oil reservoirs. Programming would be mainly in Fortran.

Although experience in programming on minicomputers or mainframes, and with graphics software, would be an advantage, we would also be interested in hearing from those with user experience in computing systems who would like to move into the software field.

Candidates would be expected to have at least a BSc degree or HNC in an appropriate subject. Appointments will be made to the Scientific Officer grade, with salaries currently in the range of £5,150 to £6,935 depending on age, qualifications and experience. The Authority also offers an attractive package of benefits including an excellent contributory superannuation scheme.

The Winfrith establishment is situated in pleasant rural surroundings close to the Dorset coast. There are excellent recreational and residential amenities in the surrounding areas from Bournemouth to Dorchester and Weymouth.

Please write for an application form to the Appointments Officer (A) Personnel Branch, AEE Winfrith, FREEPOST DO140, Dorchester, Dorset DT2 8DH, Telephone: Dorchester (0305) 3111, Ext 3049 (Ref: WA 346/3).

Winfrith

**Barron
McGinn**
Computer Systems and Consultancy

*Biggleswade
Jephcote*

DATA PROCESSING OPPORTUNITIES USA

Special editorial feature - MAY 28 ISSUE.

COMPUTER WEEKLY — Britain's largest circulated computer publication — will publish a special editorial feature in the May 28 issue designed to outline the career opportunities for fully qualified and experienced data processing personnel in the United States of America.

The current international shortage of data processing staff is likely to remain a problem for the foreseeable future becoming increasingly acute with the growth of computer installations. The prime objective of this feature will be to create a greater awareness amongst accountants of the scope and job opportunities available in the USA.

COMPUTER WEEKLY has a circulation of 100,000 and is the largest circulation computer journal in the U.K. Equally important, readership dominates all the major data processing installations throughout the world. This newspaper leads all other journals in the field covering management, marketing, financial systems, insurance, production, and operations staff.

If you are currently looking for permanent or contract work in the USA, why not take advantage of the special recruitment opportunities in the USA? Call 01-580 1000 or write to: Computer Weekly, 1000 London Wall, London EC2Y 5AS, England. Please state your requirements and we will forward your details to our contacts in the USA.

Adverts for permanent posts in the USA should be sent to: Computer Weekly, 1000 London Wall, London EC2Y 5AS, England. Please state the job title and salary required and we will forward your details to our contacts in the USA.

For further information on advertising in COMPUTER WEEKLY, contact: Sales Manager, Computer Weekly, 1000 London Wall, London EC2Y 5AS, England. Tel: 01-580 1000. Telex: 800000 CWL L.

For further information on advertising in COMPUTER WEEKLY, contact: Sales Manager, Computer Weekly, 1000 London Wall, London EC2Y 5AS, England. Tel: 01-580 1000. Telex: 800000 CWL L.

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MODUS

Software Project Leader

To organise and control software implementation on a totally new mini.

Northern Home Counties

£10,000 - £12,000

This is a newly created position, ideally suited to someone with both in-depth software development experience and good management skills who wishes to concentrate on developing a management career whilst remaining technically involved in leading-edge technology.

The initial task involves a large amount of detailed planning to achieve the implementations of existing software and utilities on a new generation of minicomputer. The appointee will additionally be managing a team of ten software programmers and designers and be responsible for both technical control and line management of the team.

Career prospects in this growing and increasingly successful Company are superb, with good salaries and benefits (including relocation if required) to match.

Dual Processor Systems

New developments of mini-controlled networks.

North London

£11,000 - £14,000

Our client seeks high level systems designers and consultants to contribute to — and advise on — the development of a number of dual processor controlled, continuous operation data networks, which are to be front-ended to several large mainframes. Essential experience must cover either extensive network design from the software point of view, or, in-depth knowledge of one of the newer dual processor minis such as Tandem or Christian Roving. Experience of both areas would be extremely well received.

Excellent salaries are on offer, with relocation if required, plus career prospects which could take one to technical levels paying £18,000 to £20,000!

Project Leader — Comms.

Project Management in a wholly development environment.

Herts. border

negotiable £11,000

Anyone seeking a senior position within communications and advanced peripheral development cannot fail to be impressed by the scope and challenging career prospects available in this Company. Communications work will include FEP's, terminal software systems, RJE, and network architecture. The peripherals section will encompass new terminal devices of every type, interface software, diagnostic and systems design.

Candidates must have a degree and at least five years experience in a development environment including some background of project management. Although the emphasis is on software ability, some contact with hardware would be an added bonus. A high level of motivation and enthusiasm is sought plus the ability to deal with multiple simultaneous tasks. First class career opportunity. Generous relocation package offered where appropriate.

Consultants: Mike Cressner or Andy Wright
If the advertised positions do not match your experience or aspirations, Mike and Andy are always available for a confidential discussion of the possibilities. An informal meeting — often an essential part of the process — can be quickly arranged.

HEXAGON CONTRACTS from £300 to £750 p.w.

IMS/ADF COBOL PROGS

12 Mths +

6 Mths +

CICS/DLI COBOL ANALYST/PROGS

3-6 Mths +

3-6 Mths

HONEYWELL To work on DPS 8/20

Indef.

DMS ANALYST/PROGS

12 Mths

4 Mths

IMS DB & DC SYSTEM DESIGNERS

6/12 Mths

4 Mths

INSURANCE & BANKING ANALYSTS

3-9 Mths

3 Mths +

RECORD-COBOL IMAGE, QUERY, VIEW

6-12 Mths

9/6 Mths

IMS DB/DC Troubleshooters

Indef.

Indef.

To discuss these and many other contract opportunities, please call any weekday up to 4 p.m.

HEXAGON

DATA PROCESSING CONTRACTS

DATA PROCESSING CONTRACTS

International Personnel Consultants

Modus Management Services Limited
148 Watling Street, Radlett, Herts. WD7 7JH

Telephone: Radlett (09276) 3077

Systems Analysts

Insurance Company — long term, stable career prospects.

Surrey

c£9,000

Well established and reputable insurance Company is seeking a number of Analysts to assist in the development of new on-line systems, particularly in the financial and management information systems team. Company uses COBOL on an ICL 2960 system, and a previous track record in this sort of environment would be ideal.

Candidates will be Analyst/Programmers or junior Business Analysts with at least 18 months systems design experience, preceded by some COBOL programming. A knowledge of database would be welcome plus experience of screen design and on-line techniques. The ability to liaise with user departments and conform to existing design procedures is essential.

Senior Programmers — Project Leaders

A magnificent opportunity to move over to Europe.

Benelux

£15,000 to £25,000

This manufacturer of computer based high technology systems is recruiting a team of people to undertake various enhancements and systems development work in the European commercial d.p. centre. The Company has two IBM 4300 machines running under DOS/VSE, with CICS being used extensively. The centre is essentially a COBOL workshop. The team will range from Senior Programmers to Project Analysts, headed up by a Project Leader. Included will be a Senior Systems Programmer.

Candidates must have experience in a large IBM site, preceded by a formal qualification, preferably a degree — this is certainly the case for the more senior positions. Naturally, a track record of project involvement is essential, preferably in the commercial area of manufacturing. Programmers must know CICS intimately and be able to lead others. Interviews in London during April.

Senior Support Consultant

Pre and post sales support plus other wider responsibilities.

Herts.

£10,000 - £11,000 + Car

This position is akin to a Project Management post since the appointee will not only be involved in establishing user requirements, writing proposals and carrying out initial design but will also have responsibility for overseeing the systems development at each site. In addition, he or she will have both marketing and product development responsibilities — great for career progression.

Essential experience required by the Company includes team/project leadership, commercial mini systems development with programming in the background. Candidates with additional distributed processing and comms. knowledge would be extremely well-viewed.

COMPUTER SERVICES MANAGER

Experienced person required to take over small but expanding DP department currently using Honeywell Level 82 mainframe, working mainly in on-line environment. The person will be required to plan, direct and co-ordinate the organisation's data processing services in accordance with the objectives laid down by the Board. The company is in an interesting stage of expansion and real opportunities exist for the right person. Salary by negotiation, company car, contributory pension scheme are included in a generous package.

Please reply in the first instance with full C.V. marking the envelope 'Private & Confidential' to the General Manager.

Cambridge Jackson Limited

Bryllies House
Hurst Street
Birmingham B5 4BT
A Leader in Universal Company

Senior Software Specialist upto £11,000

MIDLANDS BASED RETAIL MANUFACTURING & DISTRIBUTION GROUP

For these advanced projects, we require special people; people with experience of designing and developing on-line and real-time commercial and manufacturing systems on mini computers, whilst demonstrating practical ability in real-time operating systems and data communications.

Our immediate plans include the design and implementation of standardised commercial micro processor systems within numerous distributive sites. These systems will cater for the day to day needs of these operations as well as capturing data for central systems, which are processed on mainframe computers.

Additionally, Point of Sale (POS) equipment will be installed in a large number of retail sites.

The successful applicant will be part of a highly professional technical support group and will be responsible for providing specialist technical expertise on micro and mini computer software and associated networks.

Our expanding Group of Companies offers particularly good prospects together with an excellent working environment, with a considerable amount of new and advanced equipment both in use or planned for delivery in the near future.

If you have practical experience to match our requirements, and seek an interesting and responsible position in an Organisation committed to the extensive implementation of such advanced facilities, contact our Advising Consultant, Ian Payne, 021-236 3781 (24 hour answering service) or 0827 282430 (evenings and weekends).

MICROS

MINIS

POINT OF SALE



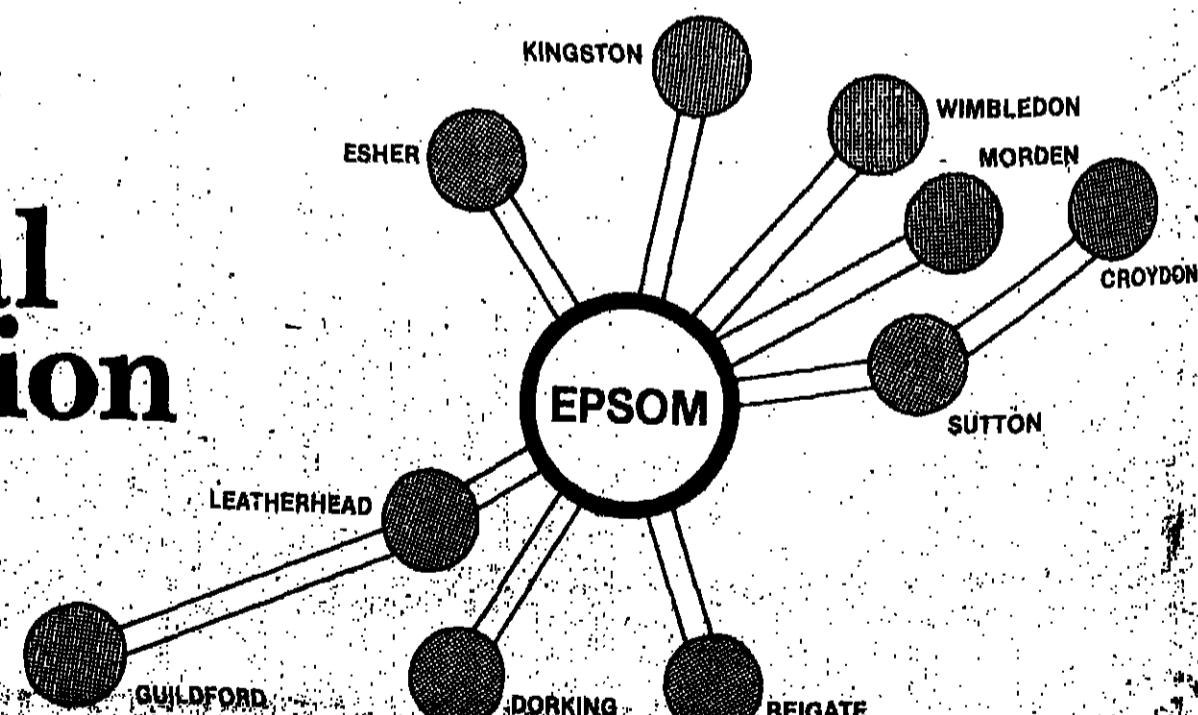
Specialist Computer Recruitment Ltd.

Epsom Financial Organisation

Work locally on a new ICL
ME29 and enjoy job security in
a friendly expanding company.

Pension funds are a growth industry. Increasing size and sophistication demand new techniques. Our client's funds include one of the twenty largest in the country. Continued expansion has necessitated a further hardware upgrade and an ICL ME29 under TME will arrive in April. Program development is continuing including on-line applications and the evolution of an Investment Accounting system ensuring interesting developments over the next several years.

The company has comfortable offices in the attractive market town of Epsom, with good rail and road links. The Computer Department is friendly and professional with a progressive attitude towards training and career development, with six monthly salary reviews, 4 weeks holiday, super EVS, good pension scheme etc.



ANALYSTS c. £10,000

You will be involved directly with users to establish requirements in major business areas, carry out feasibility studies and control project implementation. At least 2 years practical experience is required, ideally gained in a professional COBOL environment.

COBOL PROGRAMMERS to £8,500

Applicants should have three years COBOL experience, ideally gained in an on-line environment.

**CAPP
ASSOCIATES**
01-686 9693

Capp House, 96 South End, Croydon CR9 8SD
Computer and Professional Personnel Consultants

Interactive Graphics

As part of a drive to make the power of interactive computing available for research and development in universities, the Science Research Council has set up a national Interactive Computing Facility based on multi user mini computers situated in university departments and inter-connected via the SRC X25-based network. Connection is also provided to the powerful batch facilities (two IBM 360/196s and a 3032) at the Rutherford and Appleton Laboratories. The growing use of high-powered single user systems is expected in the future.

Many application areas have an urgent need for a variety of utilities to assist in the development of specific applications packages. These include command language interpreters, standard program environments for interaction and graphics libraries.

Applicants should have a degree in computing or some related subject.

Posts are based at the Chilton site and will be in one of the following grades:

Scientific Officer £4,809-£6,480

Higher Scientific Officer £6,075-£7,999

**Research Associate
(fixed 3 year term)** £5,862-£8,006

Appointment to a salary scale point above the minimum may be considered for candidates with good qualifications and particularly relevant experience/specialist training.

The Laboratories are a friendly community with their own restaurant and sports facilities nearby. We offer excellent working conditions and benefits include a local transport service, generous holidays, sick leave allowance and a non-contributory pension scheme.

For an application form, please write to: Mary Elizabeth Fry Personnel Group, Science Research Council, Rutherford and Appleton Laboratories, Chilton, Didcot, Oxon OX11 0QX, quoting reference: VN932. Closing date: 24th April, 1981.

Rutherford and Appleton Laboratories

FBC Programmer

FBC Limited is a new company owned by The Boots Company Limited and Boots and Fisons Limited. In FBC, Boots and Fisons have combined their assets and experience in agrochemicals and certain of their specialised interests in industrial chemicals.

FBC possesses a broad and powerful research base and the resources to manufacture, develop and sell products in all important world markets.

The Company has its Headquarters at Hauxton, near Cambridge and a research station at Chesterford Park, near Saffron Walden, Essex. Where the facilities for research and development work in agrochemicals are amongst the best of their kind in the world.

We have a vacancy for a Programmer to join the Data Processing Section at Chesterford Park Research Station. The successful candidate will join a small team responsible for the design, implementation and maintenance of systems for collecting, storing and retrieving research data.

Applicants, male or female, should be under 30 years of age with programming experience in either FORTRAN or COBOL and preferably experience of one or more of the following areas: Data Management, Information Retrieval, Laboratory Automation and Statistical analysis.

We offer a competitive salary supported by a substantial range of fringe benefits associated with a major industrial company including assistance with relocation expenses where appropriate.

Please write with details of your career to date including current salary to:

Peter England, Personnel Officer, FBC Limited, Chesterford Park Research Station, Saffron Walden, Essex, CB10 1XL. Tel: Saffron Walden 30123.

London Borough of Enfield
SOUTHGATE
TECHNICAL COLLEGE
Print. W.A.G. Easton, MA
Ceng. P.M.C.CHE FRSA
Ref. B13

LECTURER
GRADE I
required from 1 September 1981 to teach COMPUTER STUDIES and DATA PROCESSING to a range of courses including GCE A level, BEC/TEC Diploma and RSA. A knowledge of BASIC and COBOL would be an advantage with a PDP 11/40 computer an advantage. Applicants should preferably have previous teaching experience or have completed a training course.

Salary scale (including London Allowance) - Scale currently under review.

Lecturer Grade I £5,181-£8,583
The initial placing on this scale depends on qualifications and experience.

Application forms and further details (see marked with job reference) obtainable from the Principal, Nottingham Technical College, High Street, Southgate, LONDON N14 6SE, to whom they should be returned by Friday, 24 April 1981.

(6018)

Univac 1100 Systems Designers Copenhagen

to £16,000

A major international systems consultancy seeks a number of suitably qualified systems designers for development work on a large R.T. system for a major Danish user. Candidates will need a solid background in Univac 1100 together with exposure to DMS 1100 and TIP. Candidates should also not have school-age children. The project positions will be on a permanent basis and should last two years after which secondment to other operating groups would be a possibility. Ref. 21, Brian Harris.

DOS/VS Systems Programmers Kuwait

to £16,000 tax free

Our client, a major Kuwaiti financial institution, seeks a number of well-experienced IBM systems staff to assume team leading positions at the headquarters in Safat.

Candidates should have five years plus experience using DOS/V or VSE VM or CICS. Financial status accommodation is provided as a contribution towards the private education of any children. Additionally a 15% bonus is paid. Ref. 21, Brian Harris.

D.G. Software Engineer Central Lancashire

c. £8,000+

Our client, a dynamic young company specialising in the marketing and development of mini/micro computer based R.T. systems - particularly graphics and process controllers - seeks a software engineer with sound experience of Data General Nova software, particularly RDXOS, ACS and 1G Assembler, for support and development work at their plant. Benefits include a bonus system plus relocation expenses where appropriate. Ref. 23, Brian Harris.

Programmer Analysts

c. £13,000

A multinational manufacturing organisation based in an attractive part of Germany wishes to recruit two Programmer Analysts to work at a manufacturing plant in the area of Berlin. Candidates should ideally be graduates with experience in some of the following areas: PL/I, COBOL, ASSEMBLER, CICS, COMICS, KAPPOSS. Candidates must be prepared to learn German. Ref. 24, Neville John.

Univac 1100 Systems

W. Germany/Switzerland

to £18,500

Our client, a major continental systems house, seeks a number of Univac systems staff for permanent placement on a number of projects in the financial area in the German speaking area of Europe. Candidates should have a strong orientation towards Univac systems being able to show proven ability on one or more of the following areas: DMS1100, TIP, FMS8, Univac Assembler or COBOL. Ref. 25, Brian Harris.

Merlin Geophysical Co. Ltd. is a small, expanding, British company providing seismic data processing services for the oil industry. We require a

COMPUTER SERVICE ENGINEER

for maintaining all hardware in one of our processing centres. This hardware consists of Systems Engineering Labs. 32-77 C.P.U.s, STC Mag Tape, Laser Plotter etc.

Applicants must be single and prepared to work abroad, initially for one year and for shorter periods thereafter. They should have approximately 2 years related experience, including some prior mainframe training and H.N.C. E.E. or equivalent. The successful applicant will be trained on the S.E.L. 32-77 and Peripherals as necessary and can expect many of the benefits associated with large companies plus the satisfaction and involvement derived from working in a small expanding company.

Salary £17,000 p.a. + depending upon relevant experience.

Applications, including curriculum vitae, should be addressed to:

The Operations Director
Merlin Geophysical Co. Ltd.
Morris House
Commercial Way
Surrey
Telephone Woking 2332
Ref. 26, Brian Harris.

**Merlin Geophysical
Company Ltd.**

Box Number

No Computer Weekly
Quadrant House
The Quadrant
Button, Surrey GU2 8AS

BOX NUMBERS

Box number replies should be addressed to:

Box Number

No Computer Weekly
Quadrant House
The Quadrant
Button, Surrey GU2 8AS

Project Leaders - Analyst/Programmers

Your future could be here.

All clients, based in the West of Scotland, are part of a multi-national concern with expanding interests. A major share of the UK market and increasing export figures have led to our profitability, stability and a work force totally unaffected by the current recession.

The IBM installation, offering batch and on-line processing is therefore a major asset to the company. This is reflected in the quality of staff, who receive individual recognition and promotion career progression.

PROJECT LEADERS £20,000 + car allowance
The package will include:
- relocation and travel expenses
- excellent working conditions and opportunities as well as travel to overseas destinations. The successful

Harrison Cowley Executive Selection

Ref. 27, Brian Harris.

7

Computer Weekly tops 100,000 circulation

Challenging the climate of recession more dramatically than any comparable journal, Computer Weekly announces a major circulation increase to 100,000 — breaking the six-figure barrier for the first time in the history of UK computer journals.

FIRST SIX FIGURE CIRCULATION IN COMPUTER JOURNALS

The new circulation level will be substantiated in the Audit Bureau of Circulations (ABC) returns for the six months period from January-June 1981.

A division of SOS Bureau Ltd
The SOS Group

Trading as:
SOS Staff Bureau
SOS Industrial Staff
SOS Clerical Appointments

FIELD SERVICE TECHNICIAN £16,000 Paid overtime and bonus. Microprocessor Control Equipment.
FIELD SERVICES TECHNICIAN £16,000 Stand by, allows field Personnel Equipment Software Training.
SALES EXECUTIVE £25,000-£35,000 Personal earnings: East England Business Computer.
SYSTEMS SUPPORT ENGINEER £16,000 Programming, computer, communication, antenna, optimisation, Systems and provide technical support.
SUPPORT ENGINEER £16,000 Advanced systems support, system assessment, performance of System Software and application of hardware.
COMPUTER MAINTENANCE TECHNICIAN £16,000 £16,000 Maintenance and/or Peripheral Equipment Expert.
For these and many other vacancies nationwide, please telephone 01-7405740 or THE MAIL ROOM, LONDON W1A 1AA.

datascene

PROJECT LEADER ICL 2904

CITY
Our clients are a leading member of the London commodity market who seek an enthusiastic project leader for their ICL installation.
Candidates, who will lead a small team, should be experienced in 30, have a programming and analysis background and have successfully completed 1 or 2 projects, from design through to implementation.
Some U.K. travel is involved and the accent is on enthusiasm.
In addition to an excellent salary, the company offers a non-contributory pension scheme, free BUPA, evenings/weekends (0804).

ANAL/PROG	HERTS	£16,000
Support role, RAMIS or ICCF or ETSS with FORTRAN or BASIC on IBM Hardware.		
SY/S/ANALYST	N. BUCKS £18,000 + Car Scheme	
Minimum 3 years with IBM/COBOL/MVS/IMS		
PROGRAMMER	HERTS	£7,500 + car
Minimum 2 years on IBM/COBOL.		
LEAD PROGRAMMER	BUCKS	£9,500
Minimum 3 years IBM/COBOL.		
ANALYST	BEDS	£9,500
Minimum 18 months ICL Hardware.		
Contact: HOWLETT COMPUTER SERVICES, Ravenstone Chambers, High Street, Leighton Buzzard, Bedfordshire, Telephone: 0525 384738 or 377619 evenings/weekends (0604)		
HOWLETT COMPUTER SERVICES		

PROGRAMMERS IBM 370

LONDON
As a result of continued expansion, a very successful trading company on the fringe of the city urgently require still more PL/I programmers.
Candidates should have a minimum of 2 years' PL/I programming, which has been gained in a team environment with involvement in at least one medium system. IBM Cobol programmers may also apply.
Apart from the salary the company offers good chances for promotion and numerous benefits, befitting an organisation of their reputation.

JNR. ANALYST/PROGRAMMERS IBM 4341

LONDON
Openings exist within a leading oil company for junior analyst/programmers who can show a successful career path within the computer industry together with a good educational record. Their requirement for at least one year's commercial COBOL programming on IBM 370 or 4300 machinery together with at least good 'A' levels or, preferably, a degree.
In return they offer a definite career structure with ample training facilities, and the very best in company benefits and working conditions.

PROGRAMMER/ANALYST RPG II

LONDON, CITY
For 1 year
3 years' minicomputer programming (preferably Data General); Fortran; Cobol helpful; experience in accounting, payroll, etc.

SYSTEMS ANALYST

For 6 months or more
8-10 years' D.P. experience including 4 years' programming; IBM 370 or 4331; experience of project management, systems design, database development, control systems, etc.

PROGRAMMER

For 6 months or more
5-6 years' programming, preferably IBM Cobol; knowledge of IBM PROJAGS helpful.
MANY OTHER POSITIONS available.

Interviews will be held in DUBLIN, LONDON, etc.
Phone (001) 306902 for further details.

SAUDI ARABIA

IR-£17,500-IR £24,000 P.A. TAX-FREE

FREE housing, air fare, use of car, etc. Allowances for spouse. 4 weeks' annual holiday.

ANALYST/PROGRAMMER

For 1 year
3 years' minicomputer programming (preferably Data General); Fortran; Cobol helpful; experience in accounting, payroll, etc.

SYSTEMS ANALYST

For 6 months or more
8-10 years' D.P. experience including 4 years' programming; IBM 370 or 4331; experience of project management, systems design, database development, control systems, etc.

PROGRAMMER

For 6 months or more
5-6 years' programming, preferably IBM Cobol; knowledge of IBM PROJAGS helpful.

MANY OTHER POSITIONS available.

Interviews will be held in DUBLIN, LONDON, etc.

Phone (001) 306902 for further details.

RPG II PROGRAMMERS

LONDON, H. COUNTIES To £10,000

Datascene have recently taken a considerable number of vacancies for RPG II Programmers in London and the Home Counties.

The range of industries within the client database are wide ranging but include Petrochemical, Banking, Insurance, Engineering and Software houses.

Ideally you should have at least one year's experience but preferably 18 months' together with a good standard of education.

Progression within the various departments is good as all companies offer career progression.

M.GEN

BASIC, BASIC + PROGRAMMERS

LONDON/CITY £7,500-£9,500

We are in contact with a number of Banks who are seeking programmers with upwards of eighteen months' experience in business BASIC, BASIC+, BASIC+2, or ALMS. Successful applicants can expect to be working in a batch and real-time environment on applications such as foreign exchange and eurobonds. Opportunities for career progression are excellent and the employment packages offered include interest free season ticket loans, productivity bonus schemes, staff restaurant/luncheon vouchers and low interest mortgage facilities.

R.GEN

ANALYST/PROGRAMMERS & PROGRAMMERS

S.W. LONDON £7,500-£10,500

A leading manufacturing company requires an experienced Senior Analyst/Programmer, one Analyst/Programmer and one Programmer to complement their existing team. Experience required ranges from 2/3 years of on-line working with COBOL. A sound knowledge of commercial application and project management will be advantageous to those applicants applying for the senior positions offered. The company benefits include five weeks' holiday, product discount, subsidised canteen and Pension Scheme after one year's employment.

R.GEN

HEWLETT PACKARD 3000 COBOL

LONDON/HOME COUNTIES £7,500-£9,000

We have several Hewlett Packard clients with current vacancies for experienced Analyst/Programmers and Programmers. Experience required is from 1/2 years' experience on this equipment with a good knowledge of commercial or insurance applications and a good standard of education. Progression within the various companies is excellent as all offer solid career growth. A wide range of company benefits are offered and represent fine opportunities for suitably qualified applicants.

R.GEN

The above vacancies are only a small selection from those currently on our files and we are always delighted to talk to experienced systems and programming staff wishing to further their careers.

H7724

Datascene International Limited
169-171 Holborn Street,
London WC1N 1TP. Telex 28851

01-439 7871
24-hour answer phone

01-439 7871
24-hour answer phone

Ref. W1/0204

Targa

c. £9,000

KENT

To £12,000

PROJECT LEADER

A chance to lead the design and implementation of major on-line systems is provided by a prestigious Kent-based Insurance Company. Aside from the challenge of linking a large number of remote sites the company offers a wide range of benefits including MORTGAGE facilities and FLEXITIME. In return the successful applicant will demonstrate a COBOL background and supervisory skills gained in a formal environment. Ref. B3055

CITY

£7-£10,000

ALL LEVELS

Tremendous scope in a development environment is offered by an International Insurance Group. Utilising the latest IBM hardware together with CICS and DL/1, the company have opportunities at Programmer through to Project Leader level. A minimum of 2 years' experience is required for the Programmers, while Systems Analysts and Project Leaders will have to demonstrate relevant software and/or COBOL applications exposure. A very attractive range of benefits is offered. Ref. R3323

CITY

c. £9,000

SENIOR PROGRAMMER

A major Manufacturing Group are about to take delivery of a powerful new IBM. Their large-scale development plans include the use of structured programming techniques and CICS COBOL based systems. A Senior Programmer is required who will also act as advisor to the development team and assist at systems design level. This is a responsible and challenging position for the successful applicant who must be able to demonstrate an appropriate track record. Ref. R3339

CITY

c. £11,000

PROJECT LEADER

The opportunity to be instrumental in setting up a new Data Processing Section is offered by a major City-based Bank. The field is communications and word-processing utilising up-to-the-minute hardware. Applicants must be Associates of the Institute and have some formal O & M training with a Computer background. Apart from the opportunity for overseas travel the usual first-class BANKING FRINGE BENEFITS apply. Ref. R3340

VARIOUS

£7-£9,000

RPG2 PROGRAMMERS

We still have a number of vacancies for Programmers and Analyst/Programmers with good RPG2 experience. Positions are available in S.E. London, West End, City, Berks, Sussex, Surrey and Middlesex. Offering a wide range of applications from banking to production systems. Call us now if your career needs a boost. Ref. R GEN

ANALYSTS, PROGRAMMERS

To £11,000

A large Insurance Company in Surrey is looking for Systems Analysts and Programmers to expand their existing Department. Applicants are expected to have 18-24 months' Systems experience on ICL 2900 machines with knowledge of VME 3, DME 3 or GEORGE 3. Financial experience in either Insurance or Banking would be an advantage. Excellent benefits as expected with Insurance Companies include mortgage subsidy, annual bonus and others, adding up to a well worthwhile package. Ref. J3304

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Cambridge Instruments is an acknowledged leader in advanced technology instruments
ATE ANALYST PROGRAMMERS

We require ATE Programmers to join a small and dedicated team to write production orientated software programmes, using our highly sophisticated Genrad 179X functional ATE systems.

The ideal applicants should be educated to degree standard with minimum of two years experience of ATE programming on Genrad, Membrain or Teradyne ATE systems. Some knowledge of mini computers and design experience is desirable.

Attractive benefits, salaries and a generous relocation policy are offered by a large international high technology company, which is a major force in a worldwide growth industry.

Applicants should either write or telephone for an application form to John Slatton, Personnel Department

CAMBRIDGE INSTRUMENTS LIMITED
Rustal Road, Cambridge CB1 3QH. Tel: (0223) 42021 5010

LIVERPOOL POLYTECHNIC COMPUTER SERVICES DEPARTMENT

PROGRAMMER £5,952-£6,750 per annum

A new computer system is being installed during the summer to provide interactive facilities for all Polytechnic departments. The new computer system, supporting 64 simultaneous users, will be operating in parallel with the existing 1803A batch system. The Polytechnic's Computer Services Department was created little over 18 months ago and staffing levels within the department on the programming side are minimal. The successful applicant will be expected to play a major role in the installation of the system and the establishment of an effective computing service for the Polytechnic.

THIS VACANCY OFFERS A UNIQUE OPPORTUNITY TO BE INVOLVED AT THE START OF A MAJOR DEVELOPMENT PROGRAMME. PLEASE QUOTE REFERENCE LP/498

Applications are invited from candidates who have, or expect to obtain, a degree in Computer Sciences. For further particulars and application form, contact: Personnel Office, Liverpool Polytechnic, Rodney House, 70 Mount Pleasant, Liverpool L1 9UL. Tel: 051-708 6226 Ext 43. Informal details may be obtained from members of the Computer Services Department by ringing 051-307 3281 Ext 123

(4036)

COMPUTER ENGINEER

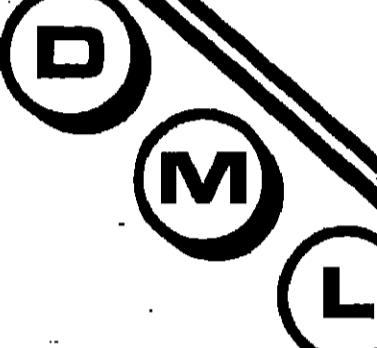
Central Scotland
£11,000 Package

DML Computers Limited are the sole distributors in Scotland for Storage Technology (STC) products.

DML have been in the IBM plug compatible field for the past four years and, as an extension of their "total sales and service" concept towards clients, they are now expanding their field engineering force.

The successful applicant will be maintaining STC Tapes, Disks, Add-on Memories and Intel microprocessors, etc. Although full product training is available, applicants must have proven experience in the large D.P. environment.

The above package including a quality company car is offered to the candidate with the right experience, initiative and personality. This is an outstanding opportunity for an ambitious and responsible engineer looking to the future.



COMPUTER PERIPHERAL SALES (LARGE SYSTEMS)

Central Scotland
£25,000 Package

Storage Technology (STC) Discs and Tapes have now been successfully installed across Central Scotland by DML and we are now looking for a top calibre sales person to capitalise on our rapidly expanding user base.

The successful candidate will have an outstanding track record of sales, with integrity in the Large Systems area.

The product range will include Discs, Tapes, Memories, Fast Printers and Communications, and you will have to prove your ability to understand a customer's requirement in this area.

The package includes a quality company car, as well as the ability to sell the "Rolls-Royce" of Discs STC.

For further details, phone Alan Smellie or Sheila Price on 031-228 6674, or send a written application to DML Computer Personnel Services, 11 Charlotte Square, Edinburgh EH2 4DR.

All applications will be treated in the strictest confidence. Please quote ref. CW2/4.

★ AMERICA ★ D.P. PROFESSIONALS WEST COAST - USA

Our client is currently in London interviewing for the following positions:

ANALYST PROGRAMMERS with 3 yrs.+ IBM COBOL/MVS (MVT) CICS an advantage
PROGRAMMERS with exp. of IBM 360 & Financial Applications.

ACP/IPARS PROGRAMMERS 3 yrs. exp.

SYSTEMS PROGRAMMERS IBM MVS or ACP exp.

For further information, please phone Lloyd Williams or Lew Berlent on 01-636 1629/627 or at the number below.

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BURROUGHS
We would also like to hear from Analysts, Programmers and Systems Programmers with exp. on Burroughs equipment.

COMPUTER TWO THOUSAND LTD
D.P. Recruitment Consultants
217-218 Tottenham Court Road
London W1P 9AF
Tel: 01-636 7584 (24 hrs) (0044)



Analyst

THAMES VALLEY

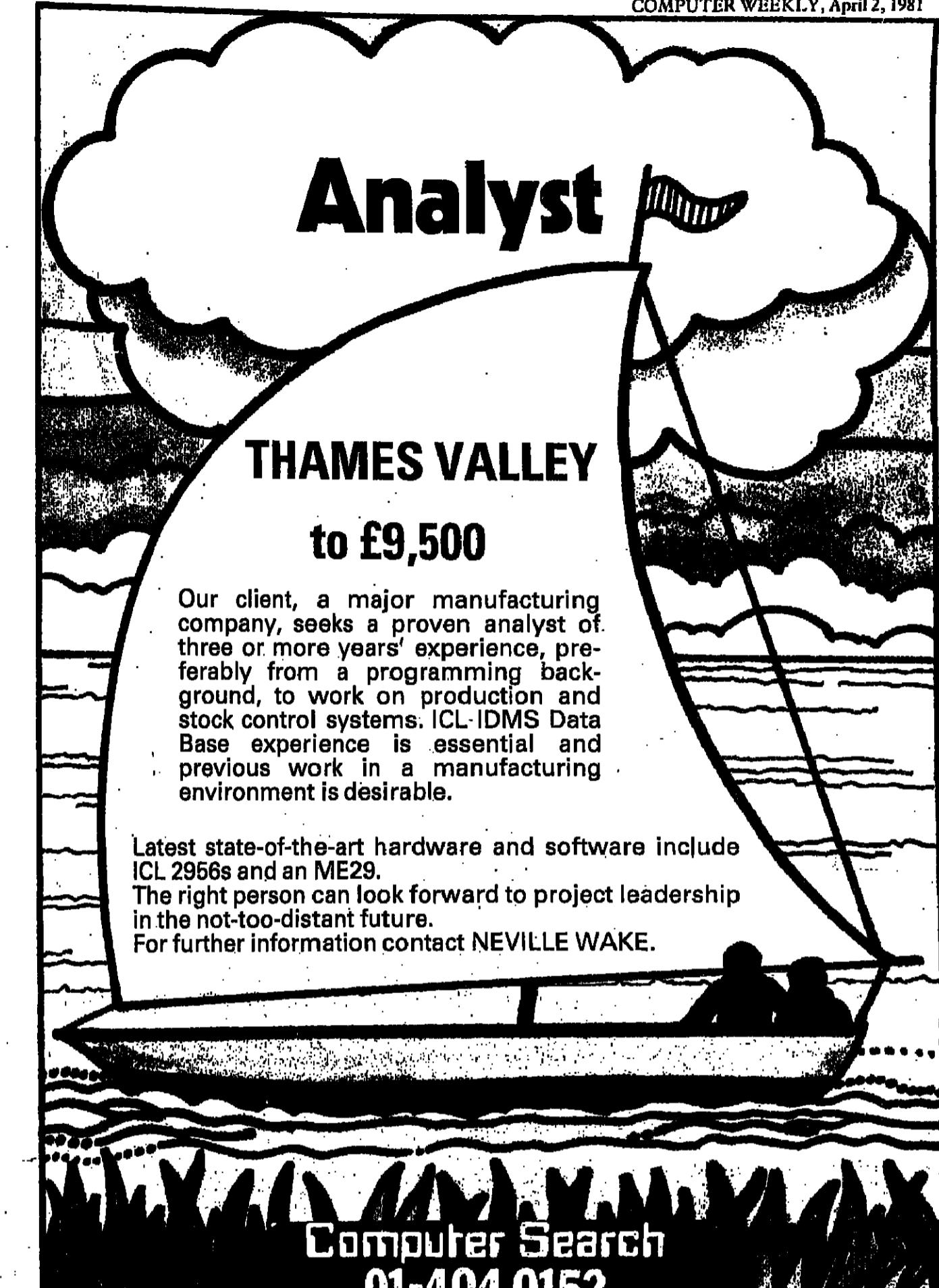
to £9,500

Our client, a major manufacturing company, seeks a proven analyst of three or more years' experience, preferably from a programming background, to work on production and stock control systems. ICL IDMS Data Base experience is essential and previous work in a manufacturing environment is desirable.

Latest state-of-the-art hardware and software include ICL 2956s and an ME29.

The right person can look forward to project leadership in the not-too-distant future.

For further information contact NEVILLE WAKE.



Computer Development Staff

The County Council installation is based on ICL 2900 computers supporting a county-wide network of terminals and ME29/2903 local processors and the Computer Development Section is being expanded by TWO ANALYSTS and ONE PROGRAMMER.

Applicants for the ANALYST posts should have at least six years ICL experience, preferably in Local Government. Knowledge of Financial or Property-based Information systems would be an advantage.

These posts are graded SO.1/2 (£7,000 to £8,800 p.a.) with starting point depending on experience.

Applicants for the PROGRAMMER post should have at least two years experience in ICL COBOL and GEORGE. Knowledge of MVS or RJE would be an advantage. It is a career grade post in the rank of Technical 1(b) to AP.6 (£3,600 to £7,300 p.a.) depending on experience.

Assistance will be given towards removal and relocation expenses.

For further information, telephone Mike Foller on 0872-74282 or write giving full details to the County Treasurer, County Hall, Tiverton, TR1 3BD, not later than 16th April, 1981. Please quote ref. no. 120 when replying.



Cornwall

KEEN COMPUTERS NEED MORE STAFF

To expand our operation in Nottingham we urgently need the following staff:

TECHNICAL-SERVICE MANAGER

This new post in our organisation will be very demanding. Only experienced and ambitious persons will be considered. Engineering knowledge will be necessary.

FIELD SERVICE ENGINEER

Field service engineers are needed to work both at our base in Nottingham and in the field. The equipment is interesting and varied. Mainly Winchester Davies and Micro Computers.

SALES PERSONS

Experienced Sales Persons with a knowledge of business systems are needed to sell an increasing range of computers. These Sales Persons will be based at our Nottingham showroom and very occasionally required to visit customer premises.

TELEPHONE NOTTINGHAM 583254

Computer Search
01-404 0152

Norwich House, 13 Southampton Place, London WC1A 2AJ

Transaction Security Limited

Advanced Systems Technology Consultants

c. £13,000 + benefits

Transaction Security Limited is a young progressive U.K. Company specialising in advanced computer and communications security technology. We have substantial financial backing from the Finance for Industry Group, which is owned by the major U.K. banks and we are planning, with overseas partners, to open an international network of systems houses to specialise in this field.

We are now seeking professional engineers and systems designers who can contribute to our corporate growth in the following fields:

- high integrity fault-tolerant computers
- computer networks

Candidates with good honours degree or equivalent in electronic engineering, computer science, mathematics and several years relevant industrial experience should apply. In confidence, to the address below.

Managing Director, Transaction Security Limited, P.O. Box 72, Barratt House, Chestnut Avenue, Guildford, Surrey GU2 5HJ. Tel: (0483) 503363

GUIDE TO RECRUITMENT CONSULTANTS IN THE U.K.

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Computer Professional Recruitment

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